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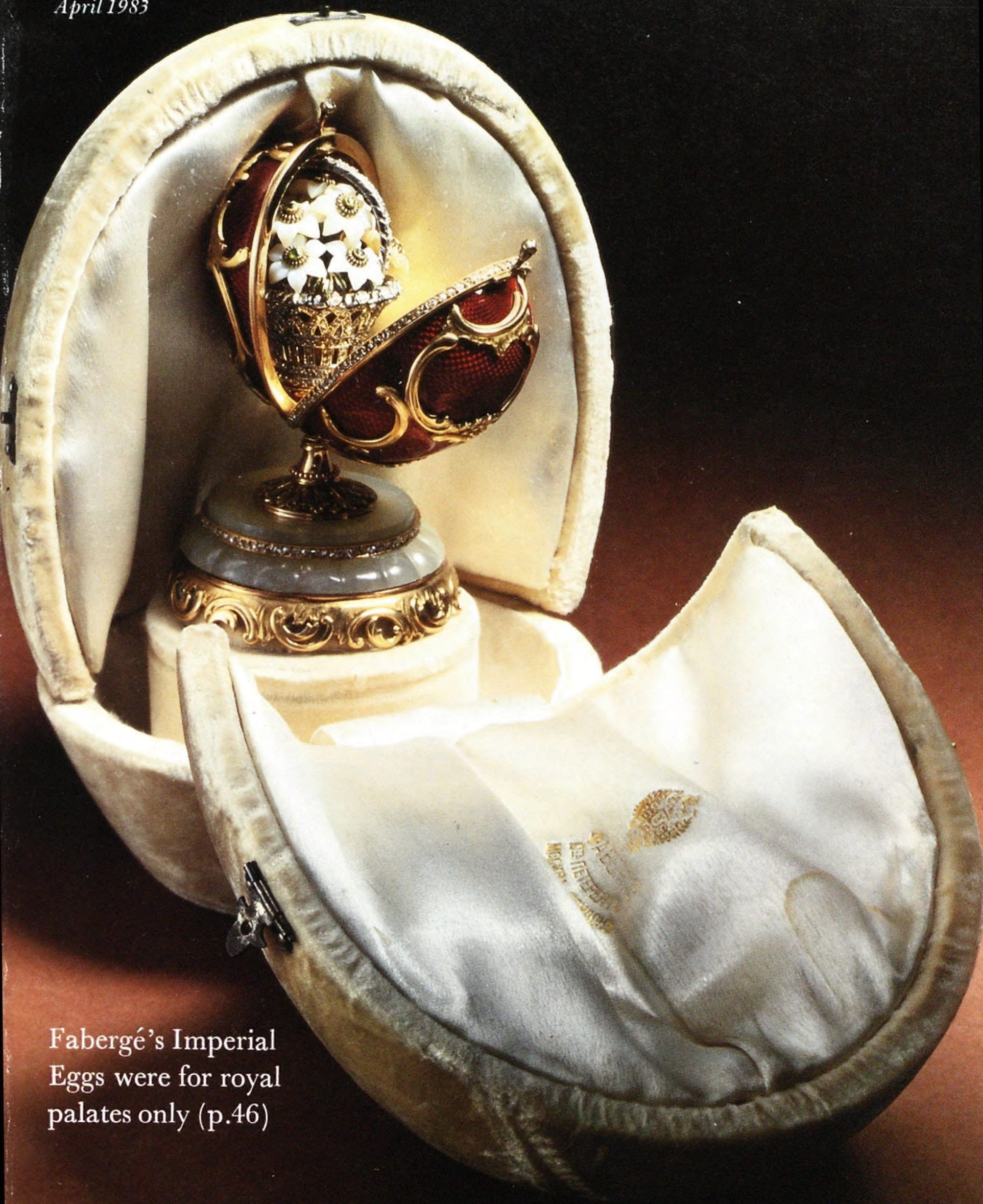
April 1983



Fabergé's Imperial Eggs were for royal palates only (p.46)

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Secretary Ripley's comments

The view from the castle

An exhibition of contemporary ceramics from Japan reveals how universal these art forms are

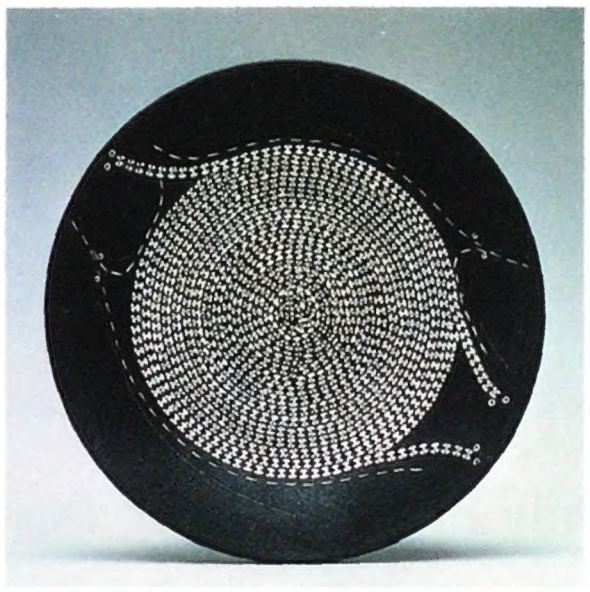
From time to time, one is reminded at the Smithsonian of the extraordinary outpouring of creativity that occurs in other nations. This is heartening, for culture is a moving and ever-evolving feature of our civilization and it is good to remember the impact over the years, plus and minus, pro and con, of our relations with neighbors around the world.

Americans in general are familiar with the fact that the Japanese have an age-old culture, and we record this in our minds as a fact, without necessarily a clear understanding of the nature of current cultural developments. Today, we are inundated with facts about Japan: its economic adroitness, its ability to muster enormous enthusiasm from workers at every level, and the superb quality of workmanship, particularly in electronics and miniaturization. We also hear constantly about the deluge of automobiles spreading around the world, and have attendant fears for our own industry.

But the artistic culture of Japan is just as vibrant and alive as everything else in that remarkable country. We at the Smithsonian were treated to an exceptional vision of that culture in a display recently on view at the National Museum of Natural History/National Museum of Man. The exhibition consisted of the personal collection of Madame Tomo Kikuchi, noted in Japan as the foremost connoisseur and collector of contemporary Japanese ceramics.

Ceramics by themselves conjure up visions of Imari, Kutani and other famous pottery and porcelain wares of the 17th and 18th centuries. By the late 19th century, fashions had changed; the Meiji-era porcelain, somewhat akin to the Western world's "Victorian," went into a decline and lost public appreciation.

What a revelation, then, it was to see Madame Kikuchi's extraordinary collection and to realize how lively, innovative and stylish the Japanese potters of today



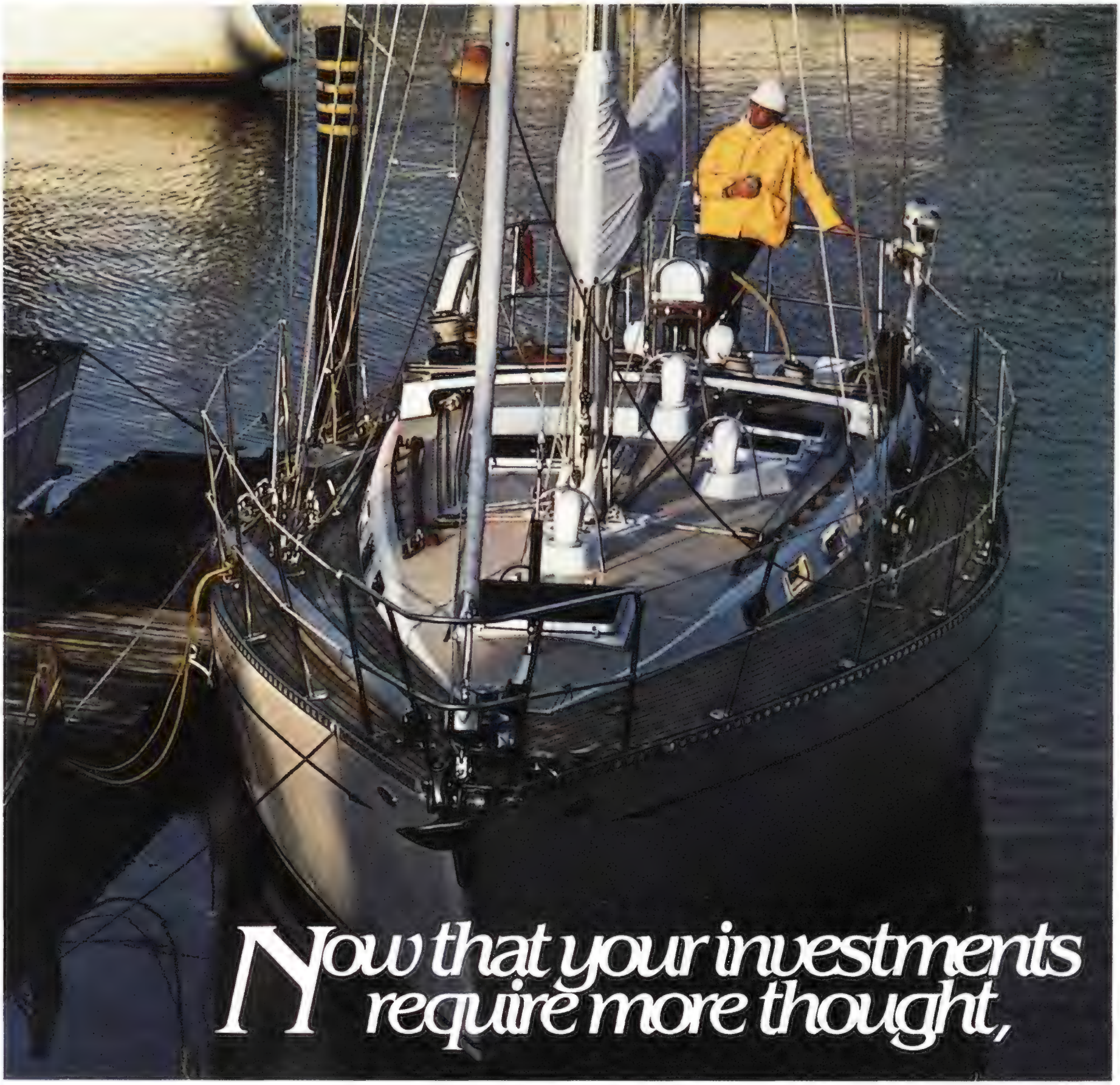
have become! From the styles of yore—the tea ceremony bowls and appurtenances in glazed stoneware, right on through to the most modern knife-edge styles reminiscent of Henry Moore—the potters have achieved a perfection that is unbelievable. To me the ceramics that were on display at the Smithsonian (and will be at the Victoria and Albert Museum in London in May) are beyond a doubt the most splendid presentation of contemporary Japanese art—and I do not mean decorative art, but art truly—that it is possible to see.

Madame Kikuchi speaks with poignancy, charity and understanding of her experiences as a youth during World War II—memories that evoke painful thoughts not only to the Japanese but to us. As a wealthy owner of coal mines, her father found that among the drafted people working in the mines for the war effort were potters. He set up a kiln, and the young girl soon found herself enraptured with the technique and craft the potters exhibited.

From these beginnings has come a sponsorship that has fostered the most exquisite workmanship and design (left).

The Kikuchi collection is a revelation to the Western world. We are only glad that many thousands of people have seen it and realized once again the bonds between West and East, the essential sympathy and universality of culture, and the positive quality of the evolution of art forms and styles that is continuing in this day and age. We at the Smithsonian view this as an earnest of things to come when our Quadrangle, the future home of the Center for African, Near Eastern and Asian Cultures, is completed. Then it will be possible continually to evoke among all people the marriage of the appreciation and love of art essential to culture, and its transmutation through the nations—a continuing stream of communication that must never be lost.

S. Dillon Ripley



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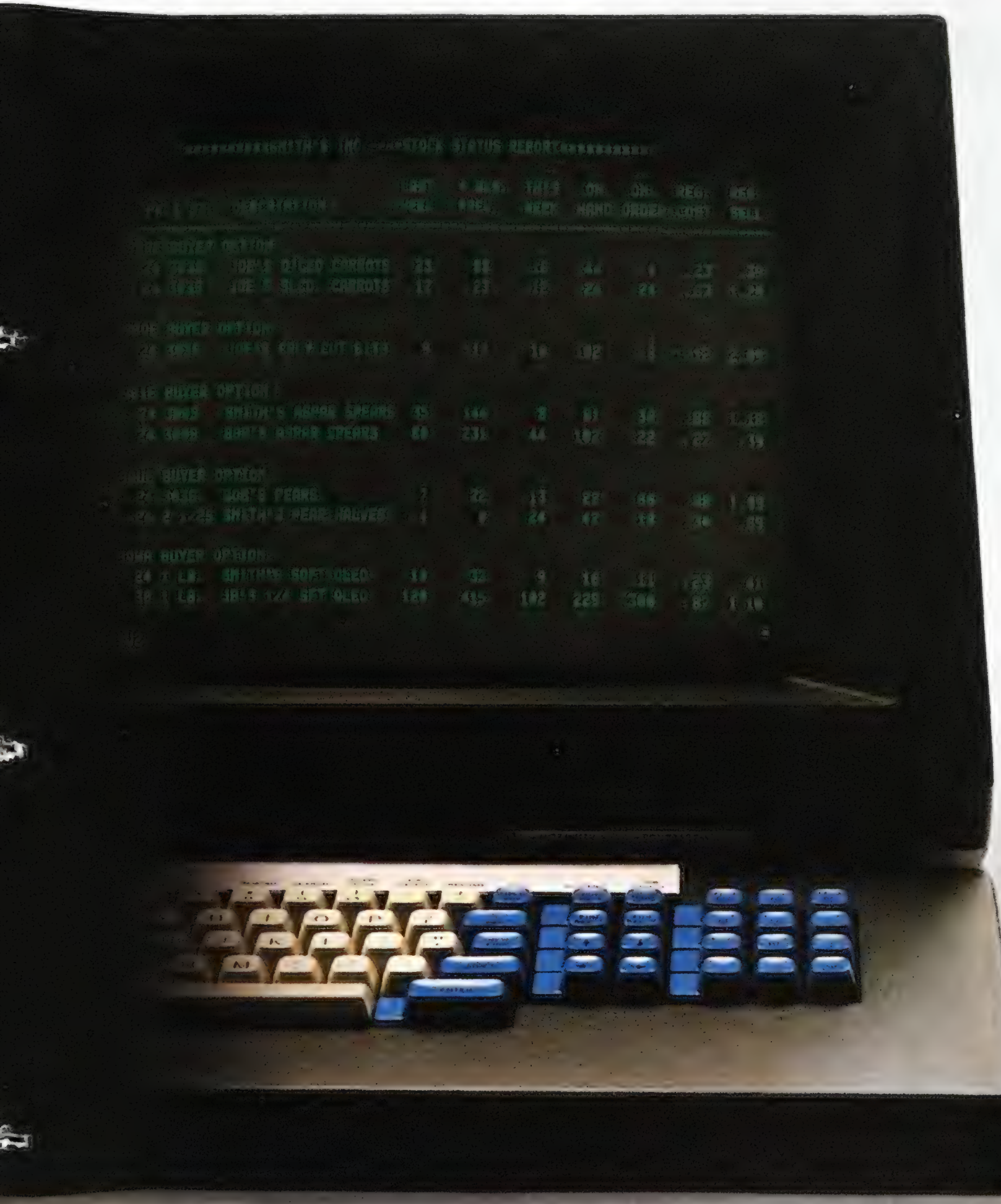

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Letters to the Editor

Birds of paradise

Dear Sir: Bruce Beehler's article in your February issue failed to recount an extraordinarily durable fable of which this pretty bird was the unwitting hero.

When Magellan's men returned to Spain in 1522 from circumnavigating the globe, they brought many souvenirs from exotic Pacific islands, including two dried skins of birds whose lovely feathers were not the only remarkable things about them—they had no legs. In life, of course, the birds had had legs, which in death the islanders, as was their custom, had skillfully removed.

European naturalists decided the birds had always been legless and stories were concocted to account for their unusual construction. In one, they never touched the Earth but spent their lives in the air, where they ate and mated. The females laid eggs in little hollows on the males' backs to hatch chicks which joined in the endless flight.

This absurd, charming story was believed then and for hundreds of years thereafter. In the 18th century the great French naturalist Buffon vouched for the birds' footlessness, and the greater Swedish taxonomist Linnaeus gave them the scientific name *Paradisaea apoda*, "footless bird of paradise." Poets loved the ethereal Earth-spurner. To the English poet laureate Robert Southey they were "the footless fowl of Heaven . . . forever Hovering o'er flowers . . ."; to Wordsworth, "Resplendent Wanderer . . . mysterious Bird . . . Bird of God! . . . in never-wearied search of Paradise."
John White
Cambridge, Massachusetts

Roquefort cheese

Dear Sir: I read Mr. Wernick's fascinating article about the unique French village of Roquefort-sur-Soulzon with extreme interest. Immediately – *immediately* – I rushed out for a loaf of country bread, a bottle of Chambertin wine and a wedge of Roquefort. In addition, I found in the article an excellent example of the geographic axiom that the natural physical environment of a given area influences that area's culture—including economic activities and any special skills such as cheese making. I plan to use this example in my World Geography classes.
William D. Curran
Thornton Community College
South Holland, Illinois

Colorado River

Dear Sir: I live in the watershed of another of the Southwest's great rivers, the Rio Grande, and can assure you that in our San Luis Valley of southern Colorado we too are subjected to "technical fixes"—the Bureau of Reclamation's Closed Basin Project. This project proposes to pump "wasted" ground water from our aquifer and deliver it to the Rio Grande to help Colorado meet its obligations to New Mexico, Texas and Mexico under the Rio Grande Compact of 1939. This waste of taxpayers' money will desertify thousands of acres of this valley.

When will the federal and state government agencies realize that their method of apportioning water in the West—robbing Peter to pay Paul—will only result in a colossal mess? Perhaps the day has come to reconsider the idea that the Sunbelt can absorb unlimited growth of industry, agriculture and population.
Teresa M. Seitz
Villa Grove, Colorado

Dear Sir: I believe the picture on page 55 is misidentified. Its caption tells us it shows ". . . tranquility at Lava Falls Rapids. . . ." The Western River Guides Association rates those rapids as eight to ten on a scale where ten represents the most difficult. Others have spoken of its "20 foot waves," where the Colorado drops 37 feet in 80 yards.
Jean Mason
San Francisco
Miss Mason is correct; our picture shows the Colorado at Lava Creek Canyon. Ed.

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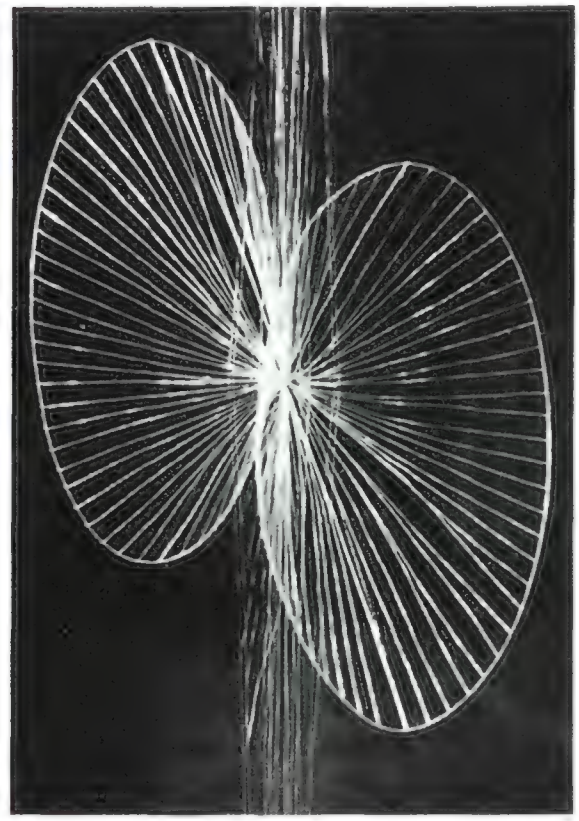
Mary O'Neill Victor, Director
The Fine Arts Museum of the South
Mobile, Alabama



Captain Healy

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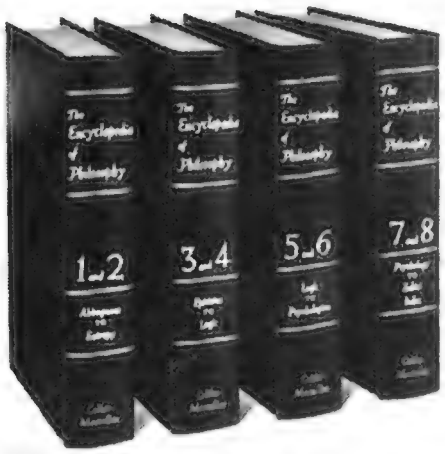

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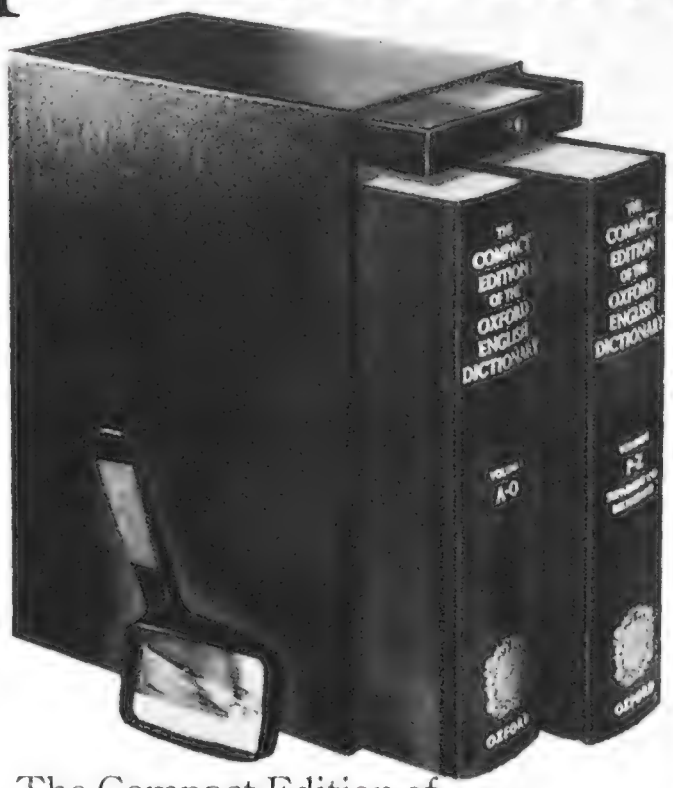

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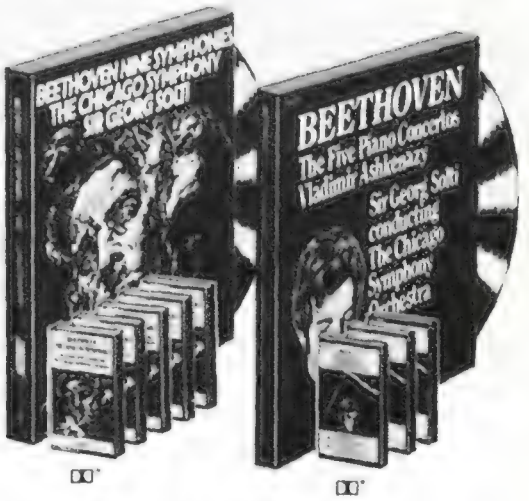
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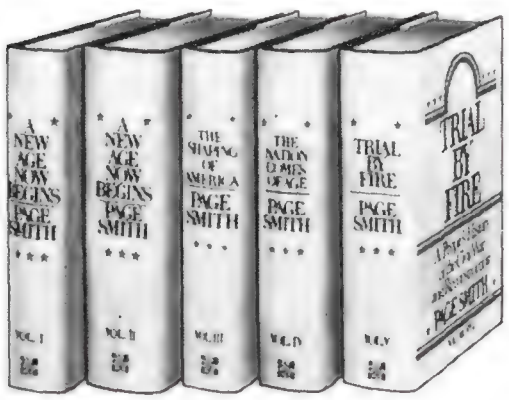
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Coriolis effect

Dear Sir: The spin of a tornado is determined by topographic features and variable wind currents in the various layers of the atmosphere. Perhaps the classic case on record was the barrage of tornadoes that struck Grand Island, Nebraska, on June 3, 1980. According to research done by Dr. T. Theodore Fujita of the University of Chicago, of the seven tornadoes that struck the city, four spun counterclockwise and three clockwise.
James H. Stankevitz
Chicago
According to Dr. Edwin Kessler of the National Severe Storm Laboratory, Norman, Oklahoma, 90 percent of all tornadoes in the Northern Hemisphere rotate counterclockwise and the rest clockwise. Because the scale of a tornado is less than that of storms such as hurricanes, the Coriolis effect, which tends to take precedence over other factors in very large movements of air, is less likely to be the determining factor in the direction of a tornado's wind rotation. Ed.

Dear Sir: Your illustration of the round, rotating table on page 73 seems to me incorrect. The arc tracing the path of the ball looks good up to the point where the ball strikes the table. But on the rebound the ball should continue to curve to the left as it proceeds; however, it is shown curving to the right.
Stephen P. Maran
Chevy Chase, Maryland
Mr. Maran is correct. Ed.

Dear Sir: Mr. Linn was mistaken in attributing the name "Big Bertha" to the German guns that shelled Paris in World War I. "Big Bertha," the German 16.8-inch howitzer produced at the Krupp works in 1914, was nicknamed in honor of the ample wife of Gustav Krupp von Bohlen und Halbach. Its effective range was nine miles and it was used initially in the attack on Liège late that summer. That gun required a crew of 200 and fired a 1,700-pound shell.

In contrast, the Paris gun had a bore of 8.25 inches, fired a 264-pound shell and used a crew of about 35.

Mr. Linn states "the huge gun was so inaccurate, however, that it was merely aimed in the general direction of Paris and the gunners did not bother to correct for Coriolis drift." The Paris guns were

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extremely accurate for their day. Of the initial seven shots, only one fell outside the old walled city.

Although the guns were always fired at the calculated optimum elevation of 50 degrees, the compass direction was carefully plotted. In addition, breech pressures were measured after each shot and powder charges adjusted to compensate for the lengthening head space in the chamber which burned forward at each shot. The final correction accounted for the Coriolis effect, a condition of which the ballistic officers were well aware.

Victor Roming
The Company of Military Historians
Carmel, New York

German troops dubbed their 16.8-inch howitzer "Big Bertha," but in the bombardment of Paris Allied troops and journalists borrowed the name for the Kaiser Wilhelm Geschütz *or* Pariskanone *—a designation that has clung. As Mr. Roming states, the Paris gun was accurately and carefully aimed and fired. However, its primary purpose was the destruction of morale among the French and the Allies. In that, it failed utterly.* Ed.

Dear Sir: In your informative article I believe the author was inaccurate in writing that "water does not always seek its lowest level." Water does indeed *seek* its lowest level, but is sometimes frustrated in that attempt by factors other than gravity, such as winds or the Coriolis effect.

Bernie J. Ferris
Denver

Phenomena

Dear Sir: It is probably not very important that Marquis Childs finds it "incongruous" to talk to an attractive woman about lipids and the molecular spectrum. SMITHSONIAN should not, however, give such foolishness so broad an audience. What are blue pencils for, anyway?

Sally K. Fairfax
Moraga, California

Terminal indecision

Dear Sir: Mr. Shenker's essay on epistolary valedictories reminded me of a favorite uncle, a corpulent gentleman who always concluded his missives with "Rhinocerosly yours."

Anice Locke
Ranger, Texas

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Around the Mall and beyond

Lines from "St. James Infirmary Blues" kept running through my mind:

Stretched out on a long white table,
So sweet, so cold, so bare. . . .*

This corpse was cold and bare, all right. Sweet? I don't know. It was beyond my experience—a giant squid, that rare and almost mythical sea monster, lying in a ten-foot coffin half filled with alcohol (a monstrous, 150-proof martini, if your mind runs that way), near the African elephant in the rotunda of the Museum of Natural History. It had lost most of its reddish skin and the ends of its tentacles from being banged around in the surf at Plum Island, Massachusetts, where it came ashore in 1980. When it was in its prime it would have stretched some 30 feet and weighed more than 400 pounds. That's about half grown for a giant squid, so you can see why ancient sailors thought these huge creatures could capsize a ship.

I waited beside the display in order to meet the person responsible for it: Dr. Clyde Roper, chairman of the Department of Invertebrate Zoology. He had acquired the beast, hearing about its stranding, hurrying to New England and falling upon it with glad cries. He had loaned it out on exhibit for all dead-giant-squid fanciers, then presented it at the Smithsonian under a blaze of TV lights and a barrage of questions from hard-eyed reporters, to the accompaniment of murmurs of "Eccchhh" and "Oooh, gross" from some members of the media, who were, meanwhile, munching tasty bits of much smaller squid prepared by a Japanese caterer.

I hadn't tried to score any scoops at that squid debut, but I had arranged a date with Roper. Right here. Now a

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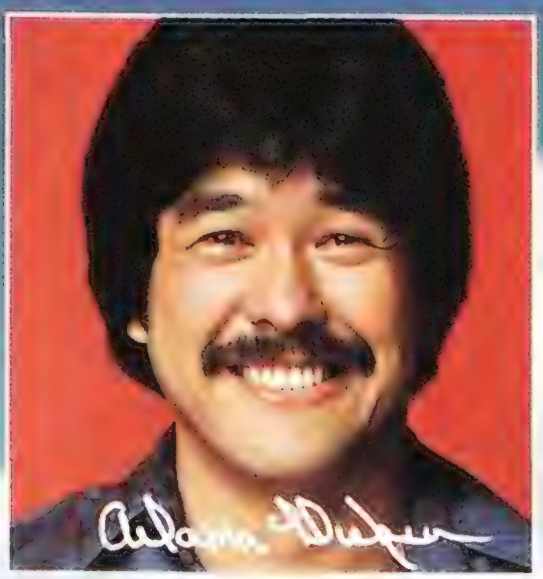

United flight attendant, Ailama Dickson

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Lae Nani, Kauai

noisy class of second-graders swarmed up to the martini and looked in. "Eccchhh!" said three of them, and away they went again, unenlightened.

And then a youngish, athletic man, wearing the fringe whiskers you associate with Yankee sea captains, dodged through the crowd and hove to beside me. "Let's go eat right now," said Clyde Roper.

"All right," I agreed, faintly, and said good-bye to the dear departed.

Dr. Roper has a New Hampshire accent that equals that of my father's friend Slocum. That plus the beard give an impression that he was probably lobstering off New England when he was 14.

To quell any doubts, one of the first things Roper told me about himself was that he had started lobstering at age 14 out of Rye, New Hampshire. "Five traps," he said. "Next year a lobsterman took me on for a cut of the profits. He spent the season working on his own boat and sent me out in a dory to run 75 traps. No motor. I rowed standing up and I hauled the traps by hand."

I noted the broad shoulders.

"I've never been so tired, or loved a job so much, or felt so strong," he said. "And I got one-third of the take. After that, another man put me to work for 50 percent, and then another stuck me in the lobster pound part of the time so I learned the shore end of it."

Young Clyde earned enough to buy a 14-footer with an outboard and 200 traps. In these, and in the lobster pound, he got a close look at all the things that are brought to the surface along with lobsters —"crabs, snails and hermit crabs, goose fish and little pipe fish. I began to get interested in the life of the sea."

Time for college. Clyde got a full scholarship at Transylvania University in Lexington, Kentucky. He dithered, for a couple of years, not knowing what he wanted to do. Then his brother suggested that Clyde should try marine biology. "I'd never even heard of it."

It inspired him, nevertheless, to load his schedule with science, and after his graduation to head for post-graduate work at the famed Center for Marine Studies at the University of Miami. He got his master's and his doctorate and joined the Smithsonian in 1966.

Roper's present position as a departmental chairman is one of the rotating

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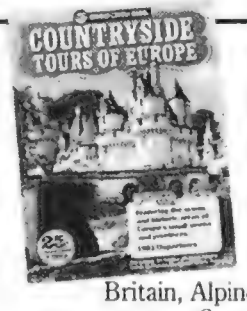

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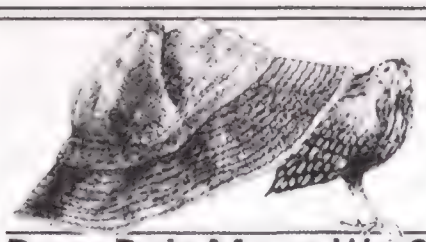

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GRAND FINALE

administrative jobs at the Museum of Natural History. After the debut party of the giant squid he made a short visit to the Red Sea, where he is helping to start collaborative research with Egyptian scientists. Secretary Ripley has been interested in the future scientific value of the Sinai ever since the Camp David talks. Roper made a preliminary visit to a conference last April, when he and other scientists were able to get Egyptian and Israeli researchers to begin conversation about marine research in the Sinai.

"We all got together in the evening at the swimming pool," Clyde told me. "By the time they parted, they were like old friends. Saying good-bye, they embraced, as they do in the Middle East."

The current project is to work with the Egyptians to set up a research program in the Red Sea. "There, because of the Suez Canal, plants and animals of Indian Ocean origin meet those of the Mediterranean and Atlantic. The interchange is fascinating. The coral reef at Ras Muhammed is one of the finest in the world—a fringing reef."

I asked him to describe a fringing reef.

"You step off this one into 560 meters of water," Clyde said. He told me that when he first went snorkeling there with the Egyptians, he dived and explored and then saw that his Egyptian counterpart, who had never done this sort of thing before, was sitting on the edge of the reef, peering into the water. "Come on in," said Roper. "The water's fine."

"But it's awfully deep," said the Egyptian, not unreasonably. I said exactly the same thing the first time I snorkeled off the Great Barrier Reef in Australia.

Clyde pointed out that whether it's two meters deep or 560, you're over your head. And the Egyptian took his plunge into

Dr. Clyde Roper, center, and late friend

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the kind of direct fieldwork that he would be doing from now on.

It's obvious that this particular department chairman looks forward to passing the chair on to the next person and returning to close contact with the sea and its strange life. He recalls one of his major Smithsonian field trips in the early '70s, when he traveled to Argentina to meet a German research vessel. He shipped out on her, joining a number of ichthyologists, taking samples with a mid-water trawl. "It was a huge Engel's Trawl—and using it in the mid-water we found a wide variety of species, some new and some of sizes not seen before. I would see a strange squid, then I'd realize that it was the first adult we'd seen of a known species."

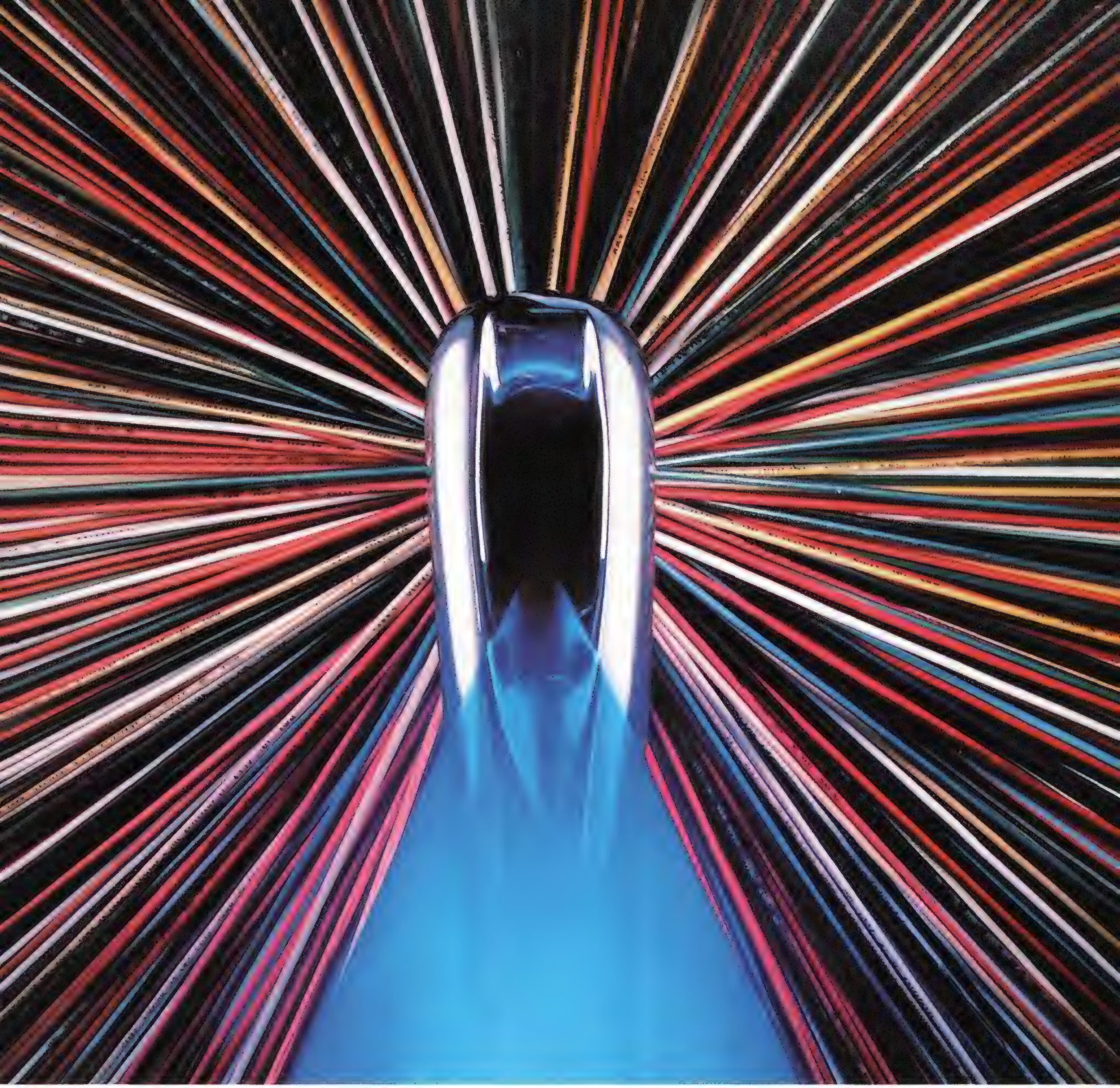
It was after this that he did a year of research in bioluminescence, fully reported in the Smithsonian Exposition book *The Magnificent Foragers.*

Roper lives in Vienna, Virginia, with his wife and two sons, 17 and 12. He met his wife back in Rye when he was in that lobster pound. She dropped in to ask directions to a restaurant advertising for help. She was a summer person—a "summer complaint," as year-round Yankees would say, but Roper didn't complain.

As a teen-age lobsterman, Clyde had looked on pleasure boats with contempt—especially sailboats, because you couldn't make a living with them. Now the Ropers have a 23-foot South Coast sloop, *Halcyon,* kept in Cuckold Creek, off the Patuxent River in Maryland. He's also an old hand with the Boy Scouts and leads a troop in Vienna. And he's an organic gardener on his one-and-a-third acres.

As for that squid, well, Clyde has been partial to cephalopods (the word stems from "head" and "foot") for years and is now writing a book about them for the Food and Agriculture Organization of the United Nations indicating their usefulness as a fishery resource, their biology and distribution, and, above all, their future as a food staple for humans.

In the meantime, you can taste squid at a number of good Italian or Greek or Japanese restaurants. Maybe American. But if you intend to try some, don't drop by first for a look at Roper's pride and joy. Although in his words "Eccchhh is only in the eye and throat of the beholder," it still is sort of . . . well, *gross.*
Edwards Park



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Phenomena, comment and notes

For a perennially novice bird watcher, this is the year to adopt a marsh and try to find out what is really there

According to the Chinese calendar, we are in the Year of the Pig. But for me this is the year of the heron—and, I hope, the year of the turtle, the muskrat and the dragonfly. After four decades of idling along beaches, meandering through thickets and hanging around marshes, I've decided to devote the year to trying to see what is right there in front of me. Lots of reading, lots of films and lectures (what better place for an aspiring naturalist to work than at this Institution?), but most of all lots of time on foot, through the seasons, good weather and foul, just being there, looking and listening.

I chose a marsh, 240 acres on the Potomac River just south of Washington, below the fall line where the river becomes tidal. Bordered by a parkway, within sight of the bridge carrying Interstate 95 across the river, it is a refuge for bird and birder alike.

So on a sunny New Year's Day, with a new notebook, binoculars and a satchel full of field guides, I set out. And even before I got to the marsh, I saw a sign, a vision of the wildness that is still around us, even in cities, proof that while we may have tattered the ecological web of life that sustains us, we have not broken it.

I stopped to unlimber my eyes at a waterfowl sanctuary next to the airport. It's an enclosed body of water of about 100 acres, connected to the river by a culvert under the parkway. The water is ringed by a buffer zone of underbrush and trees, only a few yards across. Opposite me were railroad tracks, what looked like rock-crushing and cement plants, a motel, and highways and more highways. The odd gull or two flew overhead.

Out of duty I swept the glasses along the far shoreline and there it was, motionless in the morning sun. Just to the left of a concrete park bench that had been tipped into the water stood a great blue heron, my favorite bird. It was several feet back from the river, moving its head from time to time, but otherwise

Marsh on the Potomac is deceptively quiet in winter; life never leaves it.

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motionless as it faced directly into the sun. I associate the deliberate grace, the dignity, of great blues with unspoiled places, and yet here was one unfazed by the thunder of jets taking off just yards behind me.

A neatly dressed man with a young face and white hair walked up next to me and said it was his first time there in 20 years. Back then, he recalled, Canada geese and ducks had packed the place. He looked grim, but I had seen the heron and knew the year was going to be a good one.

And so to the marsh, a trip I have made every weekend since, through an unusually mild winter and what seemed, by mid-February, an early spring. The path to the marsh starts out through a woods that bubbles with life even in midwinter. Blue jays sound the alarm as I walk in. Song sparrows, their streaked breasts marked with ink splotches, flit from bush to bush. Up in the trees, chickadees buzz to each other. White-throated sparrows kick the leaves back with their feet, then peck for treasure. Their buffy head stripes look warm, their bibs unsullied, and through binoculars the birds appear—whether because of optical distortion or the mild winter—comically plump. A female cardinal joins the gleaners on the ground; they sound like a herd of mice gnawing at the walls at night in sudden snatches and bursts.

Farther along, mud flats begin to be visible through the underbrush. Mallards are there and black ducks, loafing at the water's edge. Plaintive, polysyllabic peeps reveal early killdeer, almost invisible against the mud despite their black-and-white collars.

The trail turns out toward a point; cattails, sweet flag and Norfolk reed begin to appear, and great stretches of driftwood layered with soda bottles, beer cans and the plastic trash of civilization. To my left, upriver, the tide is running swiftly out a channel between the point and an island. Clockwise whirlpools continuously form and dissipate; standing waves just off the beach give the impression that water is flowing out of the bank under my feet. The swirling looks as though large creatures are moving just beneath the surface: I invent a northern manatee and an estuarine shark.

All I can see are some very small fish at the water's edge. In my new role as serious naturalist I cannot call them min-

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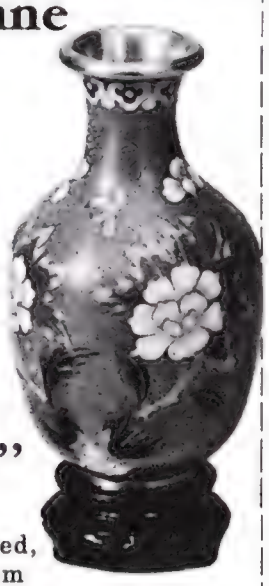

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nows, but I don't know what they really are. Farther out a male bufflehead, dramatic in white and black, is diving, but I can't see what it is catching.

Off the tip of the point a piling faces downriver, clearly placed for boaters coming up the river. One day when the tide is particularly low I scramble out over the rocks, expecting to see something about a sanctuary. But the red letters say: "Limit of Reserved Spoil Area."

Not all the trash I see came floating down the river. The broken concrete, the twisted steel reinforcing rods that stick out of the water here and there are not the remains of some old military fortification: they are demolition debris that was dumped here.

Another birder tells me this spot was once mined for sand and gravel, then some of the holes filled with spoil. But this former dump is vegetated now. Sparrows fly up out of the reeds, and cardinals chase each other through the bushes. In the water at low tide, mallards nibble in the algae growing on a chunk of concrete. On one slab well above the ebbing water, I find the open shells of 13 bivalves, whether left by a bird or a child I don't know. Even the mud is alive now.

Far out in the river (it is almost a mile wide here) clumps of waterfowl are floating here and there, and there is a steady traffic of ducks flying up and down the river, on missions I can't even guess at. Turkey vultures soar over the far shore.

Looking downriver, the rest of the marsh appears unsullied (possibly the greener-grass syndrome at work). That is where Louis J. Halle plunged in so joyfully in his *Spring in Washington*. I've yet to see a heron along the edges. Perhaps great blues are better able to tolerate the noise of jets upriver at the sanctuary than they can the joggers, cyclists, dog walkers, lovers and birders parading up and down the point here in the marsh.

By February 21, long before I had completed what I thought of rather grandly as my winter census, spring had arrived. On a holiday weekend when the temperature hit 60 F, snow was still melting in the woods, but out in the marsh redwing blackbirds were perched at the tops of reeds and cattails, flashing their epaulets as they sang in the morning sunshine. Three great blues had been circling the sanctuary near the airport, and now one rose up from the island off the point and flew unhurriedly down the river to a quieter part of the marsh.

I have not begun to understand the marsh yet. I know nearly nothing of the 26 species of birds I have been able to identify so far. The only mammal I've seen was a squirrel, the only insects a swarm of gnats in the warm winter sun. But time will tell. Time spent watching an individual until I see a complete fragment of its life and can begin to understand. Time to see what I don't expect to see. Time to hear and to smell.

I feel an all-too-human urge to "help" the marsh, to do something for it. So far, all I do is carry out trash, especially the plastic six-pack straps that could be washed away by a high tide to strangle a fish or a bird downriver. The feeling carries over into a check sent to the Nature Conservancy for their new $50-million program to save some of the nation's remaining wetlands.

But the highest compliment I can pay the marsh is to get to know it, well enough so that I am no longer a half-blind alien, clearly enough so that I can explain to others what life surges in that mud. I'll become a public relations agent for marshes; my client will be life itself.

John P. Wiley jr.

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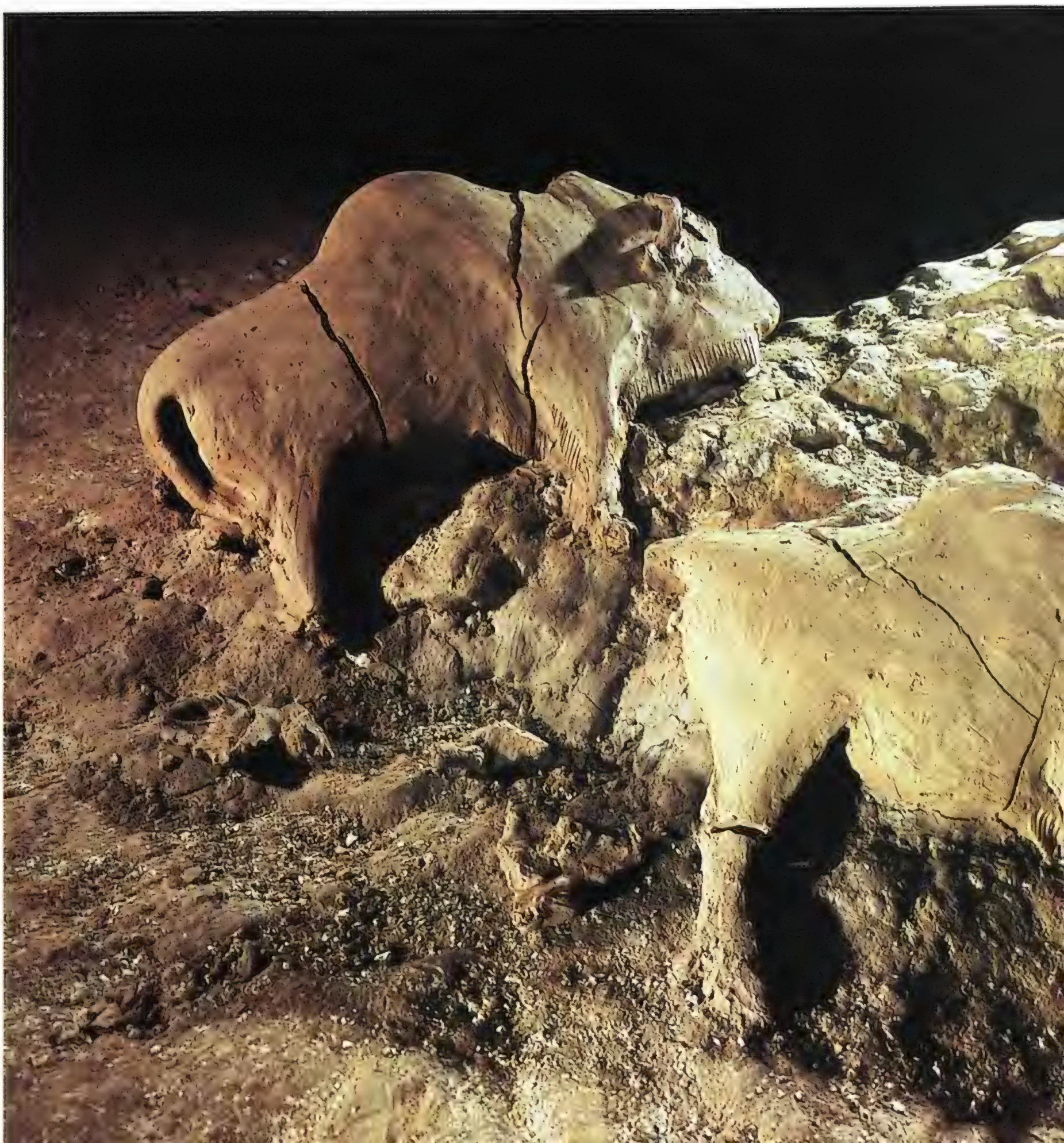
By John E. Pfeiffer

Was Europe's fabulous cave art the start of the Information Age?



Our Cro-Magnon ancestors may have started to paint and sculpt as a way of coping with expanded knowledge and growing population

It came with a bang, apparently out of nowhere and with almost no foreshadowing in the archaeological record: the world's first and longest-lived art movement. One of the most spectacular developments in the human story unfolded during the Upper Paleolithic, the Stone Age span extending from about 30,000 to 10,000 years ago. After two or more million years of relatively sluggish evolution in the *Homo* line, after what has been called a period of "almost unimaginable monotony," art appeared all of a sudden, culminating in the magnificent cave paintings and engravings of Western Europe.

About 200 sites have been discovered there to date, some 90 percent located in France and Spain, in three major clusters: in the foothills of the central Pyrenees, along the Bay of Biscay coast of northern Spain and, the heaviest concentration, within a 20-mile radius of the village of Les Eyzies in southwestern France. I have been through at least 75 of the caves, a number of them half a dozen times, often negotiating several miles of galleries during visits lasting as long as seven or eight hours at a stretch. Some are easy "tourist" caves which you could enter in evening clothes, others so horrendous that you swear never to tackle them again.

My fellow explorers have been archaeologists, students, professional guides and veteran speleologists. The speleologists may go in for the excitement, driven by the ancient "because-it's-there" spirit. Most of the rest of us, however, are there chiefly for another reason. Although I for one enjoy excitement in reasonable doses, I would not be caught dead in certain of those twisting tunnels if it were not for the paintings and engravings up ahead, and if it were not for the overwhelming question: Why did they do it?

Why did people whose ancestors had lived quite happily through 2,000 artless millenniums and who had never done anything like that before, begin going deep into caves to draw pictures on the walls, equipped with ground-up earth pigments, flint chisels, limestone lamps fueled by animal fat and, presumably, scaffolding for decorating high walls and ceilings?

Recent archaeological research provides, if not a final answer, some highly significant leads. The Upper Paleolithic saw an unleashing of evolutionary forces that seem to have been dammed up for ages. It saw the emergence of people like us, members of the *Homo sapiens sapiens* subspecies, also widely known as Cro-Magnon people, and physically the most gracile of all human species. They were certainly considerably weaker than the species they replaced, the powerfully

Clay sculptures of bison inside Le Tuc d'Audoubert are considered among the finest in Paleolithic art.

Photographs by Jean Vertut

Entrance to the Niaux cave frames the slopes of the Pyrenees. A Roman sandal print has been found inside.

The footprints of children, possibly brought to underground ceremonies, survive at Niaux.

built Neanderthals (who were two to three times stronger and who, for all the adverse publicity about their intelligence, had larger brains than ours).

The newcomers did not need all that muscle. They developed less strenuous ways of doing the same things, and a great deal more. Innovators supreme, they initiated a burst of change in practically every area of human activity, from the working of flint to weaponry and codes of behavior. Yet their very success must have brought new problems.

I believe that too much was happening too fast, too much new knowledge flowing in at an unprecedented and accelerating pace, nothing less than a full-fledged information explosion. Complexity and conflict were on the increase, and the earliest known art arose in response to the emergency. The times called for something beyond the traditional methods of passing information on from generation to generation—simply following one's parents on their daily rounds, observing and imitating, sitting around campfires and listening—something rather more formal and disciplined, the beginnings of myth and religion.

The crucial point is that our ancestors were not yet literate: the only way of storing knowledge was to memorize it. Before the Upper Paleolithic, the prodigious information-storing capacities of the brain had hardly been tapped. Now they would be.

It is my thesis that without writing, everything had

John Pfeiffer has returned again to the caves since he completed the text for his latest book, The Creative Explosion, *published last fall by Harper and Row.*

to be dramatized, and our ancestors proceeded to do just that. They organized ways of attaching emotion to information for memory's sake, and the cave art helped to achieve that end. First clues to what they were doing came more than a generation ago from André Leroi-Gourhan of the University of Paris who went into the caves expecting to find "cultural chaos . . . works scattered over the walls in disorder by successive generations of hunters," art for art's sake executed by talented individuals acting inspirationally on their own. Instead he found something considerably more complex, and not all that personal. For him every cave was a composition in itself, the result of a master plan conceived in intense detail, according to a group effort and in response to group needs.

Studies conducted since then, and still under way, confirm Leroi-Gourhan's insights. The more I have investigated the caves, the more obvious and elaborate and systematic the planning appears to me. It involved three stages: 1) leading the uninitiated through an eerie and difficult route, a kind of obstacle course to soften them up for indoctrination; 2) catching and holding their attention with shocking and frightening displays; and 3) finally, using every trick to imprint information intact and indelibly in memory.

The first stage, the softening-up process, takes full advantage of a phenomenon well known to brainwashers. To prepare people for indoctrination, it helps to thrust them abruptly into a strange environment, a hard and uncomfortable setting without landmarks of any sort and no warmth and no familiar faces: a place guaranteed to produce a feeling of loss and a craving for support. Caves certainly meet these specifications. Staying underground for prolonged periods can be as effective as extreme fatigue or hypnosis or hallucinogenic drugs in creating a so-called altered state of consciousness.

Tortuous paths to the inner sanctums

The ways into caves generally involve a succession of physically demanding maneuvers, part ordeal and part suspenseful build-up. Our ancestors caught only fragmentary glimpses of rocks and shadow shapes by the flickering light of their lamps as they scrambled up steep slopes, slid into pits, sidled into narrow fissures and up chimney formations, crawled on hands and knees, and slithered snakewise flat on their stomachs along *chatières*, cat-hole tunnels barely wide enough to squeeze through.

All this was preamble to the second stage, the creation of calculated surprise. Last summer I saw Labastide, a Pyrenean cave, for the first time from the top of a ridge in a forest, looking down into a ravine. The cave mouth is a huge jagged hole at the bottom where mist gathers like smoke from smoldering underground fires, a reasonable facsimile of the gates of hell. Jacques Omnès, one of France's leading amateur archaeologists, reports about 200 paintings and engravings in a maze of galleries extending a third of a mile into the earth.

More than 80 of the figures are concentrated in an area about 200 yards from the entrance. In a second chamber deeper within the cave are about 60 engravings, including horses, bison, human figures, an ibex head and many other animals. But the outstanding work at Labastide is a polychrome horse more than six feet long, faded but not enough to obscure the graceful contours of head and body. Painted in red and black on a large boulder that blocks the passage in the very heart of the inner sanctum, it leaps like an apparition out of the darkness.

The most striking display of all is found in Lascaux in the Les Eyzies region, a cave discovered during World War II by four boys in search of buried treasure. You stand at the entrance to the main hall in pitch dark, waiting and wondering what to expect. Then the darkness is shattered as lights are switched on. Everything appears at once as if flashed onto a curving panoramic screen. You see a burst of animals painted in yellow and black and red, a procession dominated by huge creatures with horns and seeming to stream into a funnel-mouth leading to deeper galleries (pp. 44-45).

There are similar great moments—suddenly viewed panels of large animals—on the walls of a high-domed chamber in Niaux, another Pyrenean cave, and in

Calcite deposits, probably the result of warmer temperatures, have partly obscured a bison at Niaux.

These horses are among 60 on the walls of the famed cave at Lascaux. Meaning of abstract images is unclear.

This Lascaux horse, ten feet long, has been covered by calcite film. Branched symbol, right, baffles scholars.

Altamira on the northern coast of Spain, the first art cave discovered more than a century ago, which features a ceiling composition of two dozen animals, mostly bison (p. 42). Les Trois Frères, which runs into a hillside about 30 miles northwest of Niaux, contains one of the most widely reproduced cave paintings. A composite creature is bent over in a crouching position, head twisted to the left with wide-staring owl-like eyes, wearing antlers and some sort of animal skin (p. 42). Located high on the wall of a bell-shaped chamber, as if to overawe watchers below, he is known as the "sorcerer" or "horned god."

One more adventure. I will never forget a difficult half-mile journey into Le Tuc d'Audoubert, a cave in the same hill as Les Trois Frères. Robert Begouën, owner of the sites, was somewhere ahead and I was completely absorbed in keeping up, moving along in a slit of light, my lamp swung down to see the terrain underfoot and then up to avoid bumping my head. Suddenly I turned to a stage-whispered *"C'est ici!"* which came like a shout out of the silence. It was Bégouën, his lamp shining directly on two superbly sculpted clay bison (pp. 36-37), set in a small rotunda at the end of the cave.

The caves are full of images. They contain a conservatively estimated 15,000 paintings and engravings, a rich assortment of abstract signs as well as humans and other animals, some like the sorcerer looming high for all to see, others drawn in supersecret places. Only persons in the know could find the beautiful little horse seen by crawling into an alcove and twisting around; the face with eyes in black outline placed just around a zigzag turn; five reindeer, part of a panel of some two dozen engravings in a crevice so narrow that the figures appear only a few inches from your face; the fish painted near a spring and a pit 230 feet deep.

Every new study increases our appreciation of the

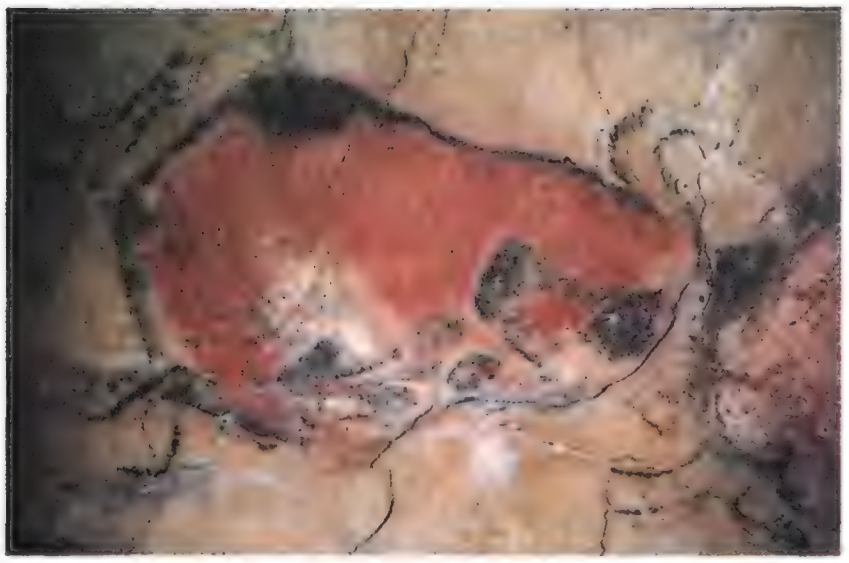
An ibex at Cougnac is representative of a style more solid, squarer in shape, than that seen at Lascaux.

cave artists as masters of special effects. J. Gonzales Echegaray, director of Spain's Altamira Museum and Research Center, while exploring a small cave recently, discovered an engraving which other archaeologists had missed completely. And no wonder. The engraving is more than six feet high, but it can be seen only under certain conditions. Echegaray himself missed it at first. He was playing his light back and forth across an apparently blank wall at the rear of a niche when suddenly, as if projected by the switching-on of a magic lantern, a figure appeared. It was magic, indeed. The figure, the head of a man drawn in profile and wearing what seems to be a beret, had been placed so that it becomes visible only if the light source is held in the right position. Move your lamp a few inches from that position, and the image vanishes. Such experiences are no longer rare, and we are discovering still subtler effects all the time.

Imagine the impact of moving through dark passages in a half trance, groping in a mental cloud of confusion and awe—and then stopping dead in your tracks, face to face with a figure or panel of figures. At such moments of maximum surprise, maximum shock, our ancestors were wide open to suggestion. They wanted to be spoken to, and what they heard came through with the force of cosmic truth, revelation. In short, they were ready for the third stage of the cave experience, indoctrination. It was in these caves, I believe, that the entire contents of the tribal encyclopedia was transferred, installment by installment, to the next generation. To ensure that the information was absorbed, everything had to be kept at high tension, peak excitement, in the way of people without writing. It seems reasonable that our ancestors would have used every possible device, including singing and dancing, to help get the message across. There is evidence for this, both in the caves themselves and in the customs of present-day hunter-gatherers.

Memorizing water sources in the desert

Consider the aborigines of Australia's central deserts, for example. Their main concern is water. The desert averages eight inches of rain a year, and unpredictable rain at that. It has a few widely scattered permanent water holes and a number of rain-dependent sources: claypans which hold water for a while, "soaks" where water must be dug for, billabongs or stream beds with a few standing pools, stagnant waters trapped in rock clefts and the crotches of trees. Place is critical in such an arid world. One must know precisely where thirst may be quenched, and be there before the supply dries up. For this there are sets of maps covering thousands of square miles of desert and locating water sources by the positions of such landmarks



A painted bison lies curled in a depression in the ceiling of the Great Hall at Altamira, Spain.

A crouching figure, half human, half animal—the "sorcerer"—is in sanctuary at Les Trois Frères.

as sandy hills, rock outcrops, scrub trees, clumps of spiky grass. These are memorized maps, imprinted in the aboriginal brain as vividly as our four-color versions in atlases.

The desert, which appears so dead and monotonous to us, is a place of infinite variety to the aborigines. According to Richard Gould of Brown University, they see in every landmark traces of their mythology, heroic beings who assumed animal and human forms, roamed widely in the remote "dreamtime" past when all the world was young and green, and left tracks everywhere. For example, one tale concerns the totemic lizard, running west to east to escape a band of hunters, who found a hole and slid into it, leaving the tip of his tale protruding. The hunters tried to pull him out, but he pulled them in. They all turned to stone, and a slit in the long low cliff that stands there today supposedly marks the spot.

This is one episode in an extended myth about the adventures of the dreamtime lizard. The myth is a series of many adventures, and each is seen as a section of a real feature of the desert. Gould followed the entire lizard track one day in an airplane, flying low over the landscape with an aborigine who pointed out hills, water sources, individual rocks and trees and other features along the way—recounting the tale associated with each. There are many such tracks, the tracks of the totemic kangaroo, dingo, bush turkey, bandicoot and so on, ancestors whose spirits are inert now and unmoving but alive and accessible through various rituals. Several thousand miles of tracks crisscross the desert, forming a network of routes and places as intricate as any road map.

Art plays a major role in learning the network. As part of their initiation into the sacred aspects of the culture, young men are conducted to isolated rock shelters and shady spots in deep canyons, and shown paintings and engravings, symbols representing actual features along dreamtime tracks in the desert. They learn the places associated with the symbols, and the myths associated with the places. They eventually learn many of the symbols carved on spear-throwers as well, and on sacred boards up to nine feet long, tribal records hidden in secret places, aboriginal "libraries."

Furthermore, the same symbols may appear in body painting, and that points to new dimensions in the design of mnemonic ceremonies. Body painting is used in dances which may imitate the movements of dreamtime ancestors in animal guises, and often take place at night. And the dancers may move to the rhythm of spears tapped against spear-throwers, or sticks pounded against the ground in imitation of the *thump-thumping* of the tail of the totemic kangaroo. Singing and dancing also may be accompanied by the low throaty growl of bull-roarers—carved boards twirled on cords. Such performances are pure theater. Gould estimates that the average adult aborigine knows the locations of some 400 water sources which, of course, make up only part of the tribal encyclopedia. Learning among the men proceeds in ceremonies conducted throughout life, each conveying more detailed and advanced information. All the arts are mobilized.

Similar ceremonies were almost certainly arranged during the Upper Paleolithic. Several paintings of high-stepping figures, including the Les Trois Frères sorcerer, as well as patterns of footprints preserved on cave floors, suggest dancing of some sort. Soviet archaeologists digging northeast of Kiev have unearthed a

set of red-painted mammoth bones which may have been used as drums and other percussion instruments. Instruments resembling bull-roarers made of bone and ivory have been found in the caves, and one can only imagine how that unearthly noise would sound deep in the earth, bouncing and rebouncing off the walls of natural echo chambers.

People could hardly have remained silent in the midst of all that activity, especially since messages are better remembered sung than unsung, rhymed than unrhymed. I picture total psychological bombardment, a mass assault on the senses. Whatever the image of a bison was meant to convey, it must have been reinforced with a vengeance by words sung simultaneously to drumbeats imitating bison hoofbeats, music imitating the rush and panic of stampeded bison herds, dances imitating the movements of bison on the run.

Only in such a context could vast amounts of information be passed on from brain to brain without writing, held firmly in memory and for life. There is evidence that the Cro-Magnons, like the Australian aborigines and other present-day tribes, started their ceremonial pedagogy early. By my estimate about 1,000 footprints have been found in the art caves, and many of them were made by children.

Among other things, children learned about a brand-new style of hunting. Mass killing apparently became a regular practice during the Upper Paleolithic. Before that, hunters did most of their killing opportunistically. They were typical predators in the sense that they concentrated on young and old animals, and avoided animals in the prime of life and capable of putting up a good fight. The Cro-Magnons changed all that. They tended to go after animals of all ages, destroying large numbers.

Hunting becomes a cooperative effort

Mass killing made life enormously more complicated. Technologically, it called for new action-at-a-distance weapons which amplified the power of muscle, and for new tools to make the weapons. The Cro-Magnons invented spear-throwers which increased thrusting force and lethal range, and probably the bow and arrow as well. Planning and foresight became more important than ever before. It was a matter of organizing game drives, stampeding herds into corrals and dead-end canyons—operations demanding the combined efforts of a number of bands, able-bodied individuals placed at specified locations and with specified duties.

The biggest problems arose after the killing and the butchering. People had always lived in small nomadic bands. Now, probably looking back with nostalgia at the good old uncrowded days, they were living in much larger groups of perhaps 100 to 200, for limited periods

In the Pech-Merle cave, lines of red dots lead across the ceiling to a decorated chamber beyond.

In a few caves are found outlines of human hands, possibly painted by blowing pigment around them.

but staying together longer. That meant more conflict, an inevitable consequence of increasing group size, and the establishment of rules for maintaining the peace and punishments for breaking the rules. The Cro-Magnons embodied all this in their myths.

The contents of those myths, the story lines and adventures, may elude us forever. But not their tone, not the general structure. I would bet that they featured drama, a collection of well-told tales, and plenty of conflict—heroes frustrated by and eventually overcoming villains—all recounted to the accompaniment of music and song and dancing. Cave art provided the backdrops to the performances, analogous to the stained-glass windows and graven images in dark Gothic cathedrals, the man-made caves of a later day.

Prehistoric art marked a stage in human evolution, a sign of mounting social complexity. It appeared when the time was ripe, and not just in Europe. The archaeological record elsewhere is scanty. But we know that India had an Upper Paleolithic of its own, which may have started as early as 30,000 years ago. Stone tools resembling those found in Europe have been found there. And prehistoric cave and rock-shelter art in India may date back to this Upper Paleolithic age. Similar developments apparently took place in China and Australia.

New radiocarbon datings indicate that the rock-shelter art of southern Africa, represented by an estimated 6,000 San (more commonly labeled Bushman) sites and as many as 175,000 paintings, started at least 10,000 and perhaps more than 20,000 years ago. No complete census exists of New World art sites, but 90 percent of them lie west of the Mississippi, several thousand in California alone. That a great deal more remains to be discovered is suggested by the just-published report of a Tennessee cave decorated—much more recently—with animal and human figures as well as abstract signs.

Art and ceremony were as essential to the species as food and reproduction. The marks of early religion, they held society together in the face of mounting unrest, creating group loyalties extending beyond family and blood relatives. But the Cro-Magnons paid a price for survival, and we are still paying it. Hunter-gatherers had always lived by egalitarian traditions. Full-time leaders are unknown among the aborigines,

Two long-horned wild cattle confront each other in a monumental frieze in the Rotunda at Lascaux.

This composite photograph conveys the processional quality of the array of figures; some are 17 feet long.

for example, and there is no trace of rank in the archaeological record—until the Upper Paleolithic. Then we get the first status burials—people laid to rest with luxury items: necklaces of pierced shells, ivory beads and spears, beautifully worked flints.

It was all done with the best intentions, of course, out of necessity. Planning requires planners, individuals with the authority to arrange ceremonies, create illusion and awe, and impart or withhold knowledge, purportedly for the common good. Power, which emerged in the name of resolving conflict, brought more conflict: it set the stage for the abuse of power, for divine kings and more recent megalomaniacs.

What happened 30,000 years ago is ancient history in terms of a human lifespan. But in terms of the evolution of the species, it is very recent, practically contemporary. The explosions of information and population which began in the Upper Paleolithic are the same ones which continue to plague us today as we careen toward the 21st century. The Cro-Magnons pioneered in trying to build stable societies out of individuals with a small-band, hunter-gatherer mentality. We are still trying.

David Moore/Black Star

A rock painting by Australian aborigines features objects and themes both sacred and naturalistic.

By Randy Sue Coburn

Celebrating the elegant art of the master of eggsmanship

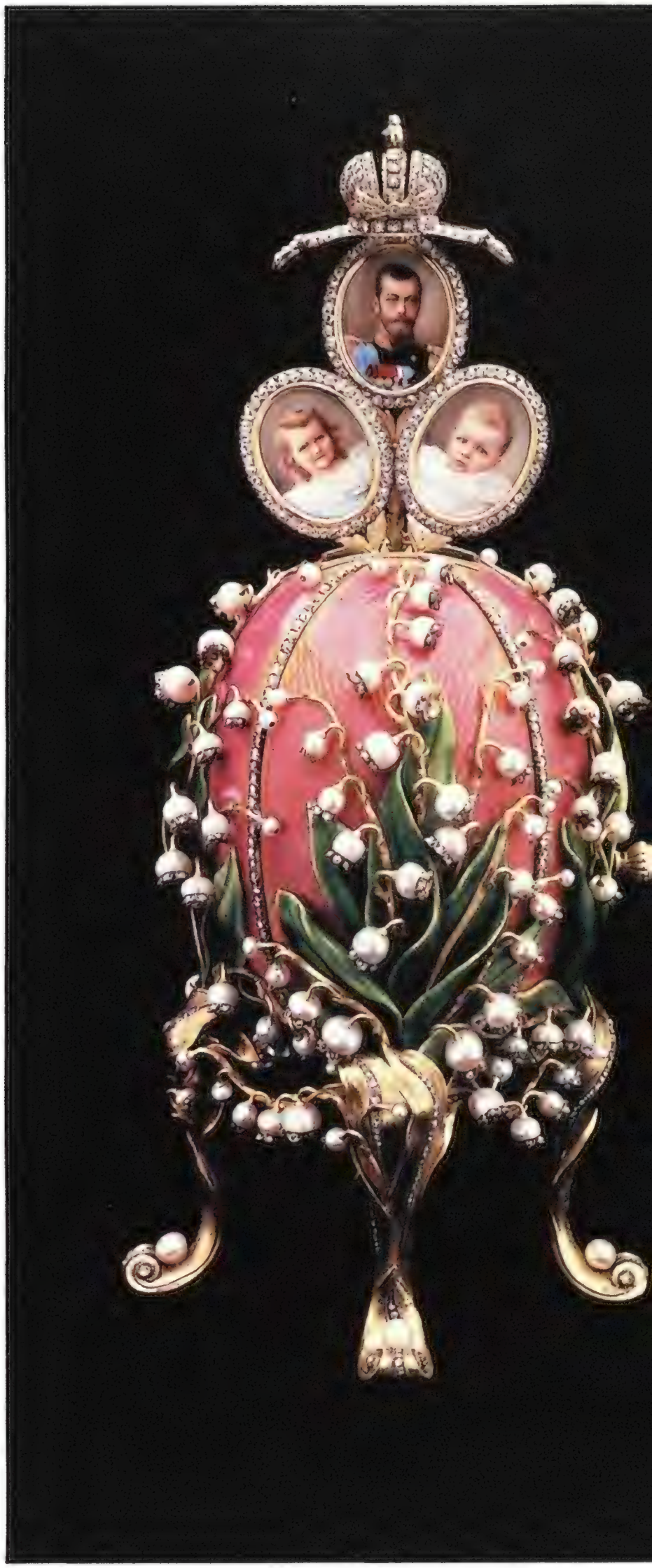
Not since the days of Cellini had royalty so prized a creative jeweler, and in Carl Fabergé the Romanovs had a gem in himself

The career of the great goldsmith Carl Fabergé both began and ended with revolutions—the first of his own making, and the second the one that doomed his most important clients, the Imperial family of Russia.

In a day when jewelers determined their work's worth by the opulence of its materials, Fabergé rebelled by creating fantastic objects distinguished by imagination and execution. Eventually, bestowing gifts from Fabergé became a Belle Epoque passion throughout Europe's rich and titled community. The Bolsheviks closed Fabergé's firm in 1918 as he escaped Russia disguised as a British courier. He died two years later at Lausanne, Switzerland, at the age of 74.

Today, an elegant lady might demonstrate the dizzying height of her sophistication by casually employing a prized Fabergé cup to hold her Q-Tips, much as publisher Malcolm S. Forbes keeps paper clips in a Fabergé dish on his desk. Of course, Fabergé's pieces were not meant to be sacred objects. But owing to the popularity and price that his work continues to command, most of us are more than happy to be able to see it in glass display cases. This month, New York offers two choice opportunities for doing so.

As part of the "Britain Salutes New York 1983" festival—a series of distinguished arts exhibits—a significant selection from Queen Elizabeth II's Fabergé collection will have its first American showing at the Smithsonian's Cooper-Hewitt Museum from April 15 to July 11; additional objects will be loaned from other British sources. From April 22 to May 22, the world's major dealer in Fabergé, the Fifth Avenue firm of A La Vieille Russie, opens another extensive exhibition—this one culled from important American and foreign collections, with proceeds from ticket sales going to benefit the Cooper-Hewitt. Still another exhibit of Fabergé's work, which opened at the Virginia Museum of Fine Arts in Richmond, may be seen at the Minneapolis Institute of Arts from April 3 to June 13.



Portraits of Nicholas, Grand Duchesses Olga and Tatiana were the surprise in Lilies of the Valley Egg.

Complete with royal coach, Fabergé's Coronation Egg was Nicholas II's gift to Czarina Alexandra in 1897.

The master of eggsmanship

Date set in diamonds surmounts Renaissance Egg, Alexander III's gift to wife, Marie Feodorovna.

Fabergé is best known for the elaborate Imperial Easter eggs designed first for Czar Alexander III to give his wife, Marie Feodorovna, each year. Russians traditionally celebrated Easter, the most important of Orthodox holy festivals, with the exchange of eggs—symbols of the Resurrection—and three kisses. Fabergé added an Imperial twist of surprise. When a cleverly placed pearl or diamond was pressed upon, many of his eggs would reveal their inner secrets of singing birds, miniature portraits, royal crowns—something almost assured to delight even a bored Czarina. The date of the comparatively simple first egg (right) is uncertain but generally placed at 1884, the year Alexander III granted his Royal Warrant to the House of Fabergé.

When Nicholas II came to the throne in 1896, the only way he surpassed his father was in the giving of Fabergé Easter eggs. Each year he presented not only one to his wife, Alexandra, but one to his mother as well. The Dowager Empress was the recipient of the only Imperial egg (the 1916 Cross of St. George Egg) to leave Russia in the possession of its original owner.

The arrangement between Alexander III and Fabergé was that the latter was to have a free hand in the design of the Imperial eggs, with the stipulation that each was to have some sort of surprise hidden within. When Alexander could no longer contain his curiosity, he would ask what the next egg might be. Fabergé's reply would be: "Your Majesty will be content," and so far as we know, he was.

Fabergé, not surprisingly, considering his client, delivered the Imperial eggs himself and the delivery was a ceremonious event. When Nicholas came to the throne and there were two eggs to be delivered on

Randy Sue Coburn, a Washington free-lance writer, wrote about the Minneapolis Children's Theater, August 1982, and Maurice Sendak, January 1982.

Marvel of jewels, color and craftsmanship, egg bonbonnière, 1⅞ inches, looks good enough to eat.

First of the Imperial eggs, circa 1884, contained golden yolk which, in turn, held this little gold hen.

Easter eve, Fabergé would make the delivery to the Emperor and one of his chief assistants would carry egg number two to the Dowager Empress.

Altogether, an estimated 53 Imperial eggs were presented to the two Czarinas. While Fabergé occasionally equaled his Imperial achievements for other clients, it is the Imperial eggs, with their aura of tragedy, that the public finds most fascinating. Malcolm Forbes, of *Forbes* magazine, has a vivid recollection of a picture of one of the eggs that was used to illustrate the pre-Revolution extravagance of Russia's rulers. Now, Forbes owns ten Imperial eggs, which makes his collection the equal in number of the Kremlin Armory's in that category. At present, the whereabouts of 43 Imperial eggs are known; the locations of ten are unknown and they constitute the last real quest for collectors.

Fabergé's work owed most to the French traditions of decorative arts, and he might have flourished in that country were it not for the 1685 revocation of the Edict of Nantes, which forced Fabergé's Huguenot ancestors to flee to a place offering religious liberties. Eventually the family migrated to the Baltic States, where Carl's grandfather became a Russian subject. Gustav Fabergé, Carl's Estonian-born father, opened his St. Petersburg business as a jeweler and goldsmith in 1842.

With the Court's removal to St. Petersburg in the early 18th century, foreign craftsmen were welcomed. One might assume Gustav's success by the fact that his eldest son, Carl, attended the elite Gymnasium Svetaya Anna. Leaving his shop in charge of his manager, Gustav retired to Dresden, where Carl eventually joined him to complete his formal education. His professional schooling, already begun in his father's workshop, progressed with his apprenticeship to the goldsmith Friedmann in Frankfurt am Main.

If Frankfurt gave him technique, his subsequent Grand Tour provided him with inspiration. In Italy, the work of Florentine enamelers and goldsmiths made lasting impressions. He haunted the Louvre and smaller collections in Paris, and the palace at Versailles, memorizing the treasures that attracted him.

Finally, Fabergé returned to St. Petersburg in 1870 at the age of 24 to take control of his father's firm. His highly gifted younger brother Agathon joined him there in 1882, the same year that Carl's career crystallized with Moscow's Pan-Russian Exhibition. It was then that Fabergé tested public acceptance of his decision to shun conventional jewelry in favor of decorative objects distinguished more by fine craftsmanship and design than by costly materials. Fabergé's fantasies

Cover of blue rocaille box contains portrait of Nicholas II, revealed when diamond catch is sprung.

Rock-crystal pots from Queen Elizabeth II's botanical collection give the illusion of a waterline.

were awarded the Gold Medal and attracted the attention of Czar Alexander III, who may have seen in them a chance to relieve the gloom that descended upon his wife with the assassination of his father.

Fabergé's work had an immediately electrifying effect when it was exhibited at the Exposition Internationale Universelle in Paris in 1900. Decorated with the Légion d'Honneur, Fabergé was himself established as golden. As his reputation grew, his St. Petersburg shop became a grand edifice with four floors of workshops and apartments for his family. Here Fabergé was the great orchestrator, imbuing his personality into objects executed by his designers and workmen. Because of the proximity of these various facilities, Fabergé could develop pieces that combined difficult materials—golds of different colors, translucent and matte enamels, precious and semiprecious stones—with the virtuosity that is the hallmark of his House.

Fabergé's enameling, perhaps the most important aspect of his work, is characterized by an exceptionally even quality and smoothness of texture, all the more remarkable for the notorious difficulties posed by working with enamels heated to the tremendously high degrees that Fabergé craftsmen customarily used; the slightest error would guarantee disaster. Fabergé's specialty, *en plein* enameling, involves the smooth covering of large surfaces. The *guilloché* technique, for which he is also noted, is a technical process of meticulously preparing the ground surface upon which the enamel is applied. Today such processes are so complex and costly that they are not often employed.

With his unerring eye, Fabergé matched craftsmen to pieces as astutely as he selected the most appropriate material for a particular objet de luxe. The Coronation Egg (p. 46), which marks the coronation of Nicholas II and Queen Alexandra in 1896, contains an exact replica of the coach used at that time. It was made by a young man of 23 who spent 15 months on the work; later he became a master carriage builder in St. Petersburg. With its rock-crystal windows, platinum tires and diamond-set gold trellis work, the coach is a remarkable example of the art of the goldsmith.

The Spring Flowers Egg (cover) was presented by Alexander III to his wife, Marie Feodorovna, in 1889. Shown in its original cover, stamped in gold with the Imperial warrant of the House of Fabergé, the outer gold shell is enameled in strawberry red. The surprise inside is a platinum basket set with rose diamonds and holding wood anemones of white chalcedony petals with green garnet centers.

If a finished piece did not measure up to his standards and its defect could not be remedied, Fabergé was likely to drop it on the cement floor of the shop. Although a hard taskmaster, he had the respect and appreciation of his employees whom he rewarded well for their long hours of work. Fabergé was always courteous with his staff, from the finest craftsman down to the office boy. At one time he had workers from all over Europe, a total of 500. According to a longtime colleague, it was his consideration for the worth of the others in his establishment that was the true foundation of his success—"the means whereby he radiated his artistic greatness."

Sometimes referred to as Father Christmas, there was enough of the child in Fabergé to delight in setting visiting children on the floor to play with his charming, but not unbreakable, animal carvings. He was known always to carry a passport, which may have

Precise cameo portrait of the five royal children is contained in an elaborate Mosaic Egg made in 1914.

been because of his popularity throughout Europe, as well as his fondness for travel.

Fabergé's poise was as remarkable as his humor. When, in 1918, the Bolsheviks arrived at his door, it is said he responded: "Give me ten minutes to put on my hat and coat." The story is told by Henry C. Bainbridge, who was manager of the Fabergé shop in London from Edward VII's death in 1910 until the outbreak of the First World War. Bainbridge, author of a book on Fabergé, has given the best portrait of him. "He always lived therefore very much to the point," Bainbridge writes, "confining himself to the business of the moment. The whole man was sharpened and there was no waste about his actions or his speech. . . . Well do I remember at a certain dinner party, feeling out of the conversation, I rashly took a plunge and addressing him said, 'I see Lord Swaythling is dead.' 'And who may Lord Swaythling be?' 'A banker,' I replied. And then came the devastating question: 'And what do I do with a dead banker?' "

At another dinner party, sensing that Bainbridge was having heavy going with his German partner, Fabergé placed a Hindustani dictionary between the two, saying, "Perhaps this will help you."

With the notable exceptions of the Russian royal family's eggs, the vast majority of Fabergé objects carry only pleasant connotations. A happier monarchy existed in England, where Marie Feodorovna's sister was Queen Alexandra, consort of King Edward VII. Queen Alexandra undoubtedly developed a taste for Fabergé during visits to Russia, where both princesses were particularly delighted by Fabergé's nature studies —the small animals carved in natural stone, and the bejeweled flowers poised in rock-crystal pots (above).

Eventually, King Edward adopted the habit of ordering yearly Fabergé presents for Queen Alexandra. That Fabergé gifts were also fit for a king was demonstrated by Mrs. George Keppel, a friend of King Edward's, who gave him an imaginatively designed royal-blue cigarette case encircled by an inlaid snake composed of diamonds. After the King's death, Queen Alexandra returned the piece to the donor as a keepsake. In 1936, Mrs. Keppel presented the case to Queen Mary to be placed with the other Fabergé items at Sandringham, one of the royal residences.

It was at the suggestion of Mrs. Keppel that King Edward commissioned Fabergé's London representative to have models made of all the animals on the Sandringham grounds. A team of Petersburg artists was transported there to finish the wax studies from which the zoological undertaking was completed, carved from stones found mainly in the Urals and Siberia, including nephrite, obsidian, rock crystal and jasper.

A. Kenneth Snowman, currently jeweler by appointment to the British royal family and guest curator of the Cooper-Hewitt exhibition, writes that the resulting miniature creatures are saved from being fey or sentimental by the sheer quality of their craftsmanship. "They are the direct results of an agile intuition exploiting to the full the material available."

Considering his collector's pocketbook, Malcolm Forbes expresses gratitude that he does not care too much for Fabergé's animals and flowers. "From time to time," he writes, "we are able to add little things and big things, but the time between times grows greater as Fabergé prices soar." Much of Forbes' collection will be part of the A La Vieille Russie exhibit, including the stunning 1889 Lilies of the Valley Imperial

The master of eggsmanship

Egg (p. 47), one of Fabergé's most original creations executed in the Art Nouveau style.

Most of the eight Imperial eggs that Peter Schaffer of A La Vieille Russie expects to exhibit will come from notable American Fabergé collections. But Schaffer explains that the emphasis of this exhibition will be the importance of Fabergé as a humorist and colorist. There will also be unusual pieces in copper, brass, pewter, leather, zinc and wood—none of which is familiarly associated with Fabergé.

Several months before Schaffer's exhibition was due to open, it was possible to wander upstairs at A La Vieille Russie in his company and see Fabergé pieces laid out in open cases, looking curiously naked without the usual glass surrounding them. The reason for this unaccustomed accessibility was simple: the pieces had just returned from a modeling session for the catalog. Thus it was permissible to pick up the silver-gilt and cloisonné-enameled vase presented to Fabergé by one of his workmen in 1912, a piece that has been in the Schaffer collection for years. For one mad moment, it was possible to comprehend the collector's zeal. Schaffer nodded knowingly. But then, in his opinion, people who collect Fabergé are "sick, and the sickest people in the world are the dealers, because we need our fix every day. In general, we have to sell to keep collecting. But while the pieces are here, they're ours."

Schaffer's family firm dates back to 1851 in Kiev. After the Revolution, A La Vieille Russie operated out of Paris where Alexander Schaffer, Peter's father, was associated with many major collectors in the Russian community. The noted Renaissance Egg (p. 48), from collector Malcolm Forbes, will also be a part of Schaffer's exhibition. This one was inspired by an 18th-century casket in Dresden's Grünes Gewölbe Museum and was made in the workshop of Michael Perchin who, along with Henrik Wigström, is credited with executing the most fantastic eggs. Ironically, this piece was the last of the Imperial eggs made for Alexander III before his sudden death.

When Fabergé pieces travel, the high measures taken in the interest of security and insurance reflect their value. Alice Milica Ilich, head of the Russian department at Christie's in New York, reckons that if an Imperial egg came up for sale today, it would probably be auctioned for $750 thousand to $1 million. Two years ago, a Christie's (SMITHSONIAN, April 1981) auction in New York City saw an unusual Fabergé enameled gold-mounted desk clock go for $35,000. In 1978, a miniature toucan carved from nephrite brought 20,000 Swiss francs. Originally, one of Fabergé's enameled picture frames sold for about $150; in New York City last year, a similar one fetched $2,400.

For obvious reasons, most dealers and collectors are discreet about the value of their most treasured Fabergé objects. But in his own time, Fabergé was well aware that his creations, as compared to those of firms such as Tiffany, Boucheron and Cartier, were of less monetary value. Far from disturbing him, this fact seemed to gratify Fabergé, who made a proud distinction of another sort between his work and theirs in a 1914 interview with *Stoliza Usadba*. "But of course these people are merchants and not artist jewelers," he said. "Expensive things interest me little if the value is merely in so many diamonds or pearls."

Peter Carl Fabergé sorts a parcel of loose gems at his desk in St. Petersburg shop about 1910.

Orange-tree Egg, a triumph of artistry and ingenuity, has a tiny singing bird which folds into the tree.

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By Thomas A. Bass

A reborn CCC shapes young lives with an old idea

Taking a chapter from our Depression history, California offers thousands of young people 'Hard Work, Low Pay, Miserable Conditions'

A 1940 enrollee in original Civilian Conservation Corps cuts through rock to build trail still in use today.

On a trail near the summit of Mt. San Jacinto, the California Conservation Corps is at work. Using rock hammers and shovels, a crew of young men and women lays a stretch of riprap—crushed rock and fill—over a steep grade of switchbacks. A teen-age girl and her father walk up the trail and stop to catch their breaths. "I had no idea somebody actually *did* this sort of work," says the girl. Joe Schroeder, busy cutting chinquapin off the sides of the trail, explains to the girl about the CCC and its backcountry projects. "When you're old enough, you ought to join," he concludes. "It's really a lot of fun."

Schroeder is the 19-year-old son of a tennis pro in Palm Springs. A bright, energetic kid, he was working the night shift at Winchell's Donuts when he decided to join the CCC. "When I told my friends I was joining the Corps, they said to me, 'You're crazy, man. You'll have to work your tail off.' " Schroeder laughs. "They didn't understand. That's what I wanted to do."

The organization's motto is "Hard Work, Low Pay, Miserable Conditions." It teaches skills no more exalted than proper use of an ax and shovel. It pays minimum wage for backbreaking work. But with a waiting list of applicants, and nearly unanimous praise from the legislators who fund it, the California Conservation Corps is obviously doing something right.

Jeannie Ruck, 21, hauling logs from clogged creek bed, understands meaning of the CCC equal-work rule.

The name intentionally evokes the original Civilian Conservation Corps which employed 2.5 million men at the height of the Depression from 1933 until 1942. Fifty years ago this month the first enrollees in "Roosevelt's Tree Army" started work that would soon affect the land, forests and waterways of every state and territory of the nation. With up to 15 million people unemployed and America in dire need of land conservation programs, the CCC enjoyed tremendous popularity. The men lived in 4,000 camps and earned $30 a month out of which about $25 was sent home.

There are few testimonials given now to the work they accomplished, but in nine years the original CCC planted more than two billion trees, constructed thousands of miles of trails and access roads and spent 6.5 million days fighting forest fires, with annual losses dropping to their lowest point ever. In a typical year enrollees laid 44,750 miles of telephone lines, maintained 62,920 miles of trails and built 420,000 dams. They built trails in the Grand Canyon, the paths along the Chesapeake and Ohio Canal and much of the Pacific Crest Trail, which runs from Canada to Mexico. One enrollee, Earl Kidd, summed it up when he wrote, "The CCC has given . . . faith that restores belief in

Photographs by Liane Enkelis

Friends and family left behind, his future uncertain, recruit Jerry Simmons faces his first day with CCC.

one's physical, mental and spiritual self, in [one's] associates and in the future."

This year Congress is pushing a new youth employment bill that would commit $300 million a year, through 1989, to the American Conservation Corps. With social conditions today similar for many to those of the '30s, it is worth examining the California Conservation Corps to see how—and how well—it works.

In addition to fighting 200 blazes yearly, Corps members grow close to three million trees from seed and plant them each spring. They clear streams, build trails, construct parks, restore landmarks, and do much the same work as the original CCC. Some specialize in newer alternative-energy projects such as building solar hot-water systems.

For their Herculean labors, the 1,800 members of the Corps receive in return Spartan quarters in residential camps and a daily regimen that starts with a two-mile run at 6 A.M. Out of their salary of $581 a month, they pay back $145 for room and board. Women make up more than a third of the Corps, and everyone does the same work and wears the same uniform of high-topped boots, cotton pants, tan shirt and hard hat.

This "ecological militia" operates out of 26 centers, each with its residents on call for emergencies 24 hours a day. A ragtag collection that includes recycled hospitals and fire stations, these centers also occupy an old naval barracks on San Francisco's Treasure Island and a former nudist colony near San Diego, but most of them are located out in the deserts and mountains.

Strung 1,000 miles between the borders of Oregon and Mexico, these CCC camps have their quirks and specialities, but they also share a common identity. They are neat, if not spiffy. Work is the order of the day, but morale is high. Food is plentiful and competition friendly in the after-dinner games of Hacky Sack (a kick-ball game) or horseshoes.

The hardest work and the best food

There is spirited rivalry among the camps. The fire fighters, sleeping several to a room and on constant alert, claim to have the hardest assignment—disputed by Corps members on "spike" (a term used by loggers meaning "temporary camp") in the desert or engaged in clearing logjams out of streams. Both the energy conservation crews and the "solar gypsies"—so named because they live and work out of six converted buses—vie for recognition as the "Einsteins" of the Corps. As for the best cuisine, Placer Fire Center offers tasty vegetables from the garden, and San Francisco does well by Asian foods. But everyone knowledgeable in the matter agrees that you can't beat Nadine Azevedo's homemade tortillas and salsa verde at Yosemite.

Uniforms are optional after a nine-hour workday,

Tietia Gilbert, 18, appears nervous during training, but has since become a fire fighter at Placer Center.

and anyone can visit the nearest town, if there is one, on weekends. But daily life for Corps members while in camp is run on a no-nonsense schedule with five inviolable rules: no drugs, no alcohol, no violence, no destruction of state property and no refusal to work. Enrollment is limited to one year, except for those hired for a second year as crew leaders.

To join the CCC one has to be between the ages of 18 and 23, a resident of California, and willing to work. Candidates sign a statement of consent, called the "nasty letter," which reads in part: "The CCC is a WORK program. You will do dirty, backbreaking work; and no one will thank you for it. . . . You will work in rain, high winds, intense heat, snow, mud, and cold mountain streams. Above all you must accept supervision. You must follow instructions."

Joann Payan, 21, was active in the Latin Queens "social club" in San Bernardino when she joined the CCC: "I've never done anything like this before, and I have my mind set on doing a good job."

Along with a curriculum of night classes and a requirement that everyone without one get a high school diploma, Corps members are also required to keep daily journals. Joann Payan had just finished training as a fire fighter and was on her way to action in Los Angeles County when she wrote: "The CCC is a pretty cool place if you like the outdoors and hard work. If you're looking for an air-conditioned room and no sweating, you're in the wrong place."

Kathy Hastings, 19, was employed cleaning houses for a developer in Riverside when she saw the following advertisement in the local newspaper: "Women and men—18 to 23. Fight fires, build trails, plant trees, fight floods. The California Conservation Corps has a job for you (if you can handle it)." "I made more money in a week cleaning houses than I do now in a month," she told me. "But I wasn't having fun."

Most of its recruits leave less behind on joining the CCC than Kathy Hastings. Even the official statistics on youth unemployment in California show about 30 percent. As Robert Pope, a young man from Vallejo, puts it, "Dope, messing up, and stealing is all that my friends back home have going for them." The CCC has developed a credible reputation: businesses and state agencies hire its graduates.

I drive out into the San Joaquin Delta one day to meet a CCC crew sandbagging levees. There are 6,000 acres of McDonald Tract flooded, and I find the eaves of barns and houses barely visible above the water. The air reeks of hydrogen sulfide bubbling up from rotting crops, and the work of securing the levees with stakes, wire, sandbags and plastic is as dirty as any promised in the "nasty letter." Lunch break here is also a time to write, and an affable young man from East Los Angeles shows me his journal. The first entry reads: "My name is Ed Wallace and the reason why I'm

Fire fighter Eileen Macken chooses a quiet moment to write in her journal, a daily requirement of Corps.

Karen Vinciguerra measures the slope of the grade on trail before crew packs it with fill and crushed rock.

Eric Vanderleest used to cut granite for the CCC, but he has now become an energy auditor for the state.

here is because I was out of work for six months and I found my life going nowhere. Every day I would get up at 11 o'clock and watch TV for two hours."

The most recent entry in his journal begins: "For the first time I actually saw the flooded Delta. It blew me away. It really is a disaster. We tied together phone poles all day to put them in the water, string them out, and anchor them where the water gets shallow. When the wind picks up and makes waves, the telephone poles should stop the wave action."

The first Wednesday of every month the Greyhound bus station in Sacramento fills with some 300 new Corps members arriving from around the state. After a day filling out forms and being measured for uniforms, these young men and women are bused again to the CCC Training Academy outside of San Andreas. Up in the Mother Lode country of the Sierra, in a former youth detention facility, they spend three weeks learning how to use hand tools, fight fires, and follow instructions from wake-up call at 5:30 A.M. until lights-out at 10 P.M. Those who survive this part of the CCC ordeal will be assigned at random to a "home" center, where life should seem friendlier, even if the schedule remains the same.

On "intake day" in Sacramento I see a white-haired, grandmotherly woman waving goodbye to her son, Bryan Rosetta. "I'm so glad to see him go," his mother says to me. "He's the youngest of the three and it's time he was off on his own. My brother was in the original CCC, and it made a man of him."

For many of these young people this will be their first job, if not their first time away from home. Friendships will make up a good part of their experience in the Corps, and letters from camp to camp often count as daily writing assignments. As one staff member puts it, "What happens when Watts meets Eureka in the dormitory is the story of the CCC."

Many of those registering are women, and the Corps is actively trying to recruit more. Women drop out less frequently than men, and Hispanic women fare best of all. Dormitories are segregated by sex, but otherwise the CCC insists on absolute equality in working conditions. Suzanne Anderson, director of training at the Academy, delivers a speech to new recruits. "The

Author Thomas A. Bass is a free-lance writer whose article on the Rocky Mountain Biological Laboratory appeared in SMITHSONIAN *last May.*

roles are changing," she says. "It's time for women to step out and help. You can put on mascara and curl your hair, but you can also learn to use a pickax and a brush hook. It's OK to cry around here, so long as you cry and work at the same time."

There is much else that changes or is left behind on joining the Corps. Like cars. "My friends back in Harbor City are all low riders," says 19-year-old Eddie Soto. ("Low riders" outfit their cars with hydraulic levelers so that the bodies can be swayed or dropped to the pavement.) Soto himself owns a 1975 Cadillac with a "bad" paint job and wire wheels. "My favorite thing on Saturday night was to cruise Hollywood Boulevard dropping my ride," he says. "Doing classic moves, like pancaking, which is when you drop the car all the way to the ground and the sparks fly."

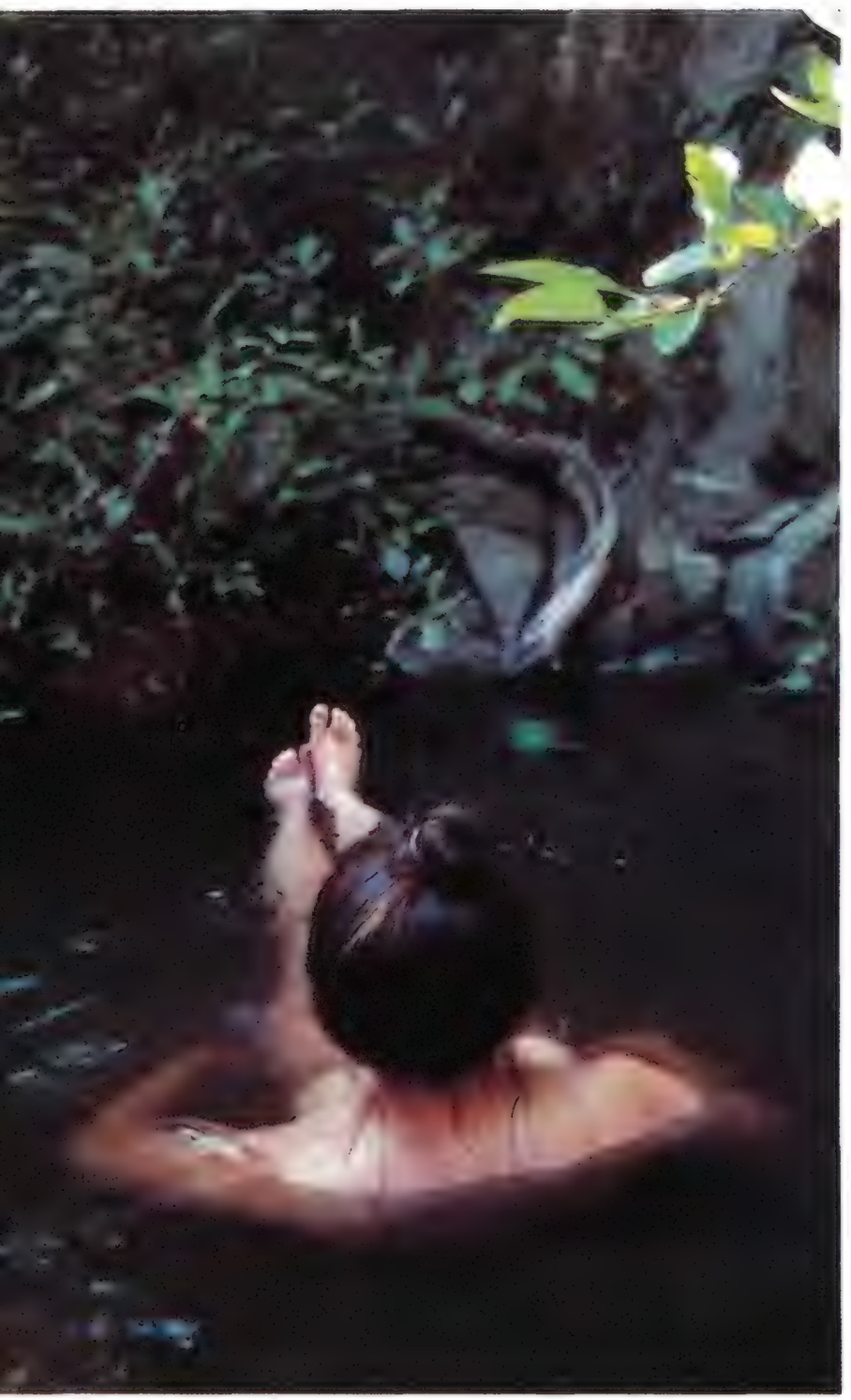
When a job at any restaurant or doughnut stand will give you enough money to keep a car on the road, why leave it behind and head for the backcountry of California to build trails by hand and clear logjams out of streams? As Eddie Soto puts it, "I want to get my high school equivalency and learn some skills. It's the only way I'm going to get anywhere."

The history of the California Conservation Corps reaches back to the administration of then-Governor Ronald Reagan, who in 1971 founded the Ecology Corps as an alternative service program for conscientious objectors. Soon after his election as Governor, Jerry Brown abolished the Ecology Corps and transferred its functions into the more broadly-based CCC.

The Corps foundered for a number of years between indecisiveness and political corruption. Accused of attracting drug dealers and hooligans, the CCC was facing calls for its early abolition when Brien Thomas Collins was appointed director in 1979. A hard-drinking Irishman from New York who had been disabled by a faulty grenade while leading a platoon through the Mekong Delta, Collins turned out to be an administrative genius with a knack for promoting talent and generating enthusiasm. "I do not care about you!" Collins would bellow at new Corps members during his monthly address at the academy. "I am not concerned with your happiness. I am concerned with the expenditures of taxpayers' dollars. I know I'm going to work you to death. And I know you're going to work hard or I'll fire you."

Jeff Smith climbs a tree to gather seeds to germinate for annual planting of three million trees by CCC.

Under glass, Chris Sauer nurtures native shrubs, trees, grasses for stream- and trail-recovery projects.



A bath in a cold stream helps Roxanne Strangfeld relax her sore muscles and wash away dirt and sweat.

Collins also excelled at turning arguments against the CCC on their heads. Attrition out of the Corps is steep. The average stay is five-and-a-half months, while only two out of ten recruits make it through an entire year. (These figures are slightly misleading; they neglect "positive attrition," which includes leaving the Corps for full-time schooling or a job.) Collins explained: "We made it something like the Marine Corps. We toughened up on the rules and just started firing them. It has become a status symbol to survive."

Beyond Collins' leadership, it was actually a number of state disasters that catapulted the CCC into the news and helped to reverse its fortunes. In February 1980 the Corps fought flooding out on the levees of San Joaquin Delta and throughout the state. Wearing their hard hats emblazoned with "CCC" at every camera angle, night after night on the evening news Corps members appeared to bail out the sinking ship of state. The CCC made news later that year when it fought major fires in Southern California.

It was actually a more quixotic event that again mobilized the CCC en masse. The fame of the three C's rests on the three F's. The Corps had already performed heroically in fires and floods. Now came flies. In 1981 there were two major alerts against an infestation of Mediterranean fruit flies. Nearly 1,000 Corps members were mobilized and became involved in tree stripping. They slept in tents and public buildings until their work was finished. For weeks, laboring 11 hours a day, seven days a week, the CCC stripped 589 tons of fruit by hand in a 200-square-mile area.

New skills replace brown strokes

Later that year, John Dugan took over the Corps. Also a New York Irishman, he had walked a police beat in Harlem for three years before joining the Army, where he acquired, as an Air Cavalry commander in Vietnam, a Silver Star, the Distinguished Flying Cross and some Air Medals. Dugan had been second in command at the CCC. Now his program has moved forcefully into teaching skills. After one of his speeches to new Corps members at the Training Academy, he remarked to me, "You saw what was out there. That audience was fraught with failure. Their lives have been nothing but brown strokes. The state is filled with kids like that. But all you have to do is reach down, pull out their character, give them a little self-esteem and direction, and they'll flourish."

Dugan counters charges that the program costs too much. In six years the CCC has employed 17,000 young people and returns to the taxpayer $1.65 in benefits for every dollar spent. "CCC-type programs are an idea whose time has returned," he says.

Robert Burkhardt was a plumber and circus juggler

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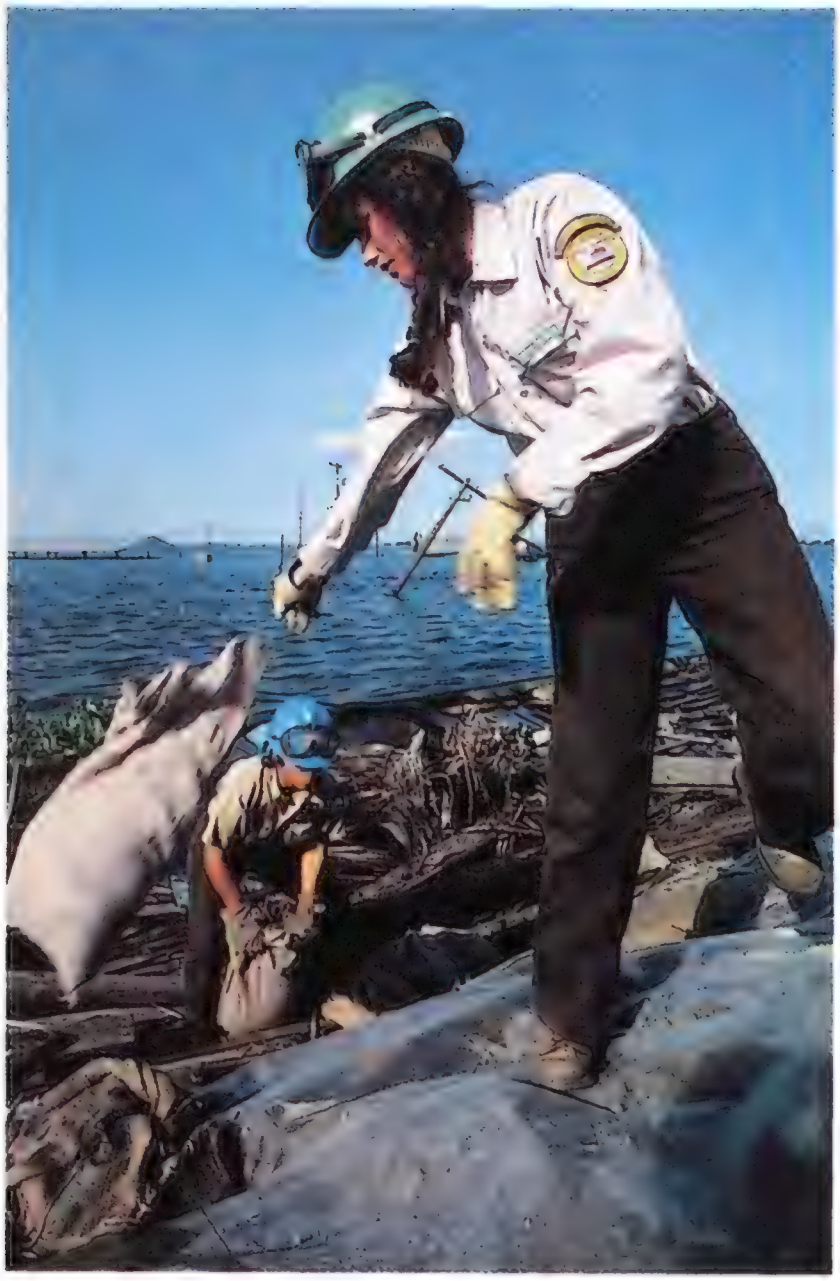


Sandbagging levees during flood on McDonald Tract proves a challenge—but fun—for Kathy Svendsen.

CCC fire fighter cuts a path to block the spread of a forest fire that destroyed 20,000 acres last year.

before he started work at the CCC, although he also held a doctorate in education. Now its chief deputy director, he is an irrepressible source of ideas and memos, many philosophical in nature and speckled with quotations from Rousseau to Roosevelt.

For years people have remarked on the collapse of public education in California and elsewhere. Even though two-thirds of its recruits have high school diplomas, Corps members, on the average, read at the seventh-grade level. The Corps expects everyone to raise this two grade levels in a year by taking courses or completing a high school diploma. Toward this end, Burkhardt sent out a directive: "Each One, Teach One," the idea being that Corps members who knew how to read would teach others who did not. But with many still having trouble reading, it became apparent that their real problem was an inability to write.

Burkhardt fired off another directive: "Everyone Writes, Every Day." Corps members were told to write daily and required to turn in at least 250 words a week to their crew leaders. "We set out," says Burkhardt, "to integrate writing into their daily lives."

At one point in my travels I find myself spending four days on horseback with Burkhardt, riding the High Sierra trails above Yosemite Valley. He is making a tour of the 60 Corps members who each summer provide the National Park Service with half of all its backcountry crews in California.

The skill of trail building, using only hand tools and muscle, is nearly a lost art. Mark Meleason and Myra McCracken explain the theory of it as we walk over some of their recent work. "To build this causeway," says McCracken, pointing to a corridor of rocks laid on a granite ledge, "required a lot of pissanting," which is the backcountry term for hauling rocks from point "A" to point "B." "We dug in this wall of boulders," she says, "and then secured keystones at the head and foot of the causeway, before pissanting another few tons of material to fill it up with alternating layers of crushed rock, sand and dirt."

The work should never show

"The trick in building something like this," says Meleason, "is that you want it to last 50 years, and you want it to look natural. We spent nearly two weeks here, but we hope people walking down the trail won't even notice what we've built."

During a month traveling through California looking at CCC camps, I attract unsolicited testimonials from many people who have been helped by the Corps. Judith Alexander owns a house on the north coast of Marin County, which suffered torrential rains and flooding in January 1982. "Four feet of mud filled the streets," she tells me. "My neighbors were losing their

homes and everything they owned. The first people to reach us were a crew from the CCC. With more storms on the way, they spent two weeks sandbagging our houses and clearing mud out of the streets. We put radios out for them to listen to the Super Bowl, but they worked right through it. They were like angels or elves. I don't know where they slept at night, but there they were every morning, out to save our houses."

One day Clark Emch, director of the nearby CCC center, and I hike to the summit of Mt. San Jacinto, a 10,824-foot peak rising straight out of the desert. He wants to look at the work being done by Joe Schroeder and his crew. "We were sleeping on the job," says Schroeder, "but when we saw you guys coming up the trail, we quickly laid a mile of channels and runoffs."

They are rebuilding a section constructed in the 1930s by the original CCC, and all along the trail we pass historic evidence of the old Tree Army at work: a boiler rusting in the woods, a mule-drawn scraper, a rescue shelter made out of rocks and moss chinking. "We've forgotten how to build like this," says Emch, studying the shelter. "This country has lost a sense of workmanship, and we're suffering for it."

While the Corps members explain to me how they run this project, we look across the smog-filled desert. This vast stretch of ancient sea bottom is controlled by a patchwork of state and federal agencies, all of them vying for work crews. The Corps promotes a freewheeling system of swap and barter, where the National Park Service at Joshua Tree National Monument provides tents, and the CCC, in turn, builds them a radio tower, or the town of Yucca Valley gets a new playground for giving crews classes at night. "I just wish we could do more," one of them comments. "Like build a park from the ground up."

The language of the California Conservation Corps is remarkably old-fashioned. It speaks almost a Biblical tongue full of words such as "character" and "responsibility." People talk earnestly about the integrity of work, even the art of it. But mainly what I see at the CCC camps are young people *doing* work. They restore parks in the Mojave Desert, cut trails in Yosemite and fight fires in the Sierra. With this physical labor as a backdrop, members of the Corps have earned the right, as few others have, to talk about the value of work.

Jeannie Ruck (left) and crew leader Leatha Harris celebrate end of another day of clearing streams.

By Jane Howard

Angry storm over the South Seas of Margaret Mead

An Australian anthropologist's new book claims that Coming of Age in Samoa *was the product of a young Barnard girl's fancy*

Two years ago Derek Freeman sat in his garden in Canberra, Australia, and tried to guess how his book on Margaret Mead's work might affect her reputation. Her reputation, he predicted, might "do a 32," a phrase he had learned in James Joyce's *Ulysses*: 32 feet per second, per second, is the rate at which bodies fall through space.

"I rather suppose," Freeman later said in a letter, after mailing off the manuscript for his just-published *Margaret Mead and Samoa: The Making and Unmaking of an Anthropological Myth*, "that I may have written a book that will create the greatest denouement in the history of anthropology so far, not excepting Piltdown Man!"

Originally Freeman wanted the book to start with a few epigraphs. He collected several, filling cards in his painstaking handwriting, which has unusually wide spaces between the characters. One of his favorite epigraphs came from a letter Charles Darwin wrote in 1860. "If I could stagger you in ever so slight a degree," said Darwin, "I should be satisfied."

Now, on the phone across the international date line from Canberra, where he is professor emeritus at the Research School of Pacific Studies at Australian National University, Freeman sounds like a satisfied man. "I have succeeded, haven't I," he asks, "in staggering the establishment?"

No question that he has. Freeman has been the delighted object of worldwide attention since last January 31, when an article headlined "New Samoa Book Challenges Margaret Mead's Conclusions," and filling 43 column inches, began on page one of the *New York Times*. Harvard University Press, which had not been planning to publish Freeman's book quite so soon, stepped up its printer's order from 7,500 to 30,000 copies. A flurry of similar headlines appeared in other papers and magazines.

People were puzzled, if not staggered, from Canberra to Cambridge, Massachusetts, and Cambridge, England, where Freeman took his doctorate. What did this fuss mean? Who was this 66-year-old Australian scholar, known mostly within his own profession as the dogged and slightly eccentric author of some brilliant work on a tribe in Borneo, to cast serious doubts on the authenticity of Margaret Mead's *Coming of Age in Samoa*, which may be the best-selling book in all the history of anthropology? Why, four years after her death, was he besmirching the good name of its legendary and widely beloved author?

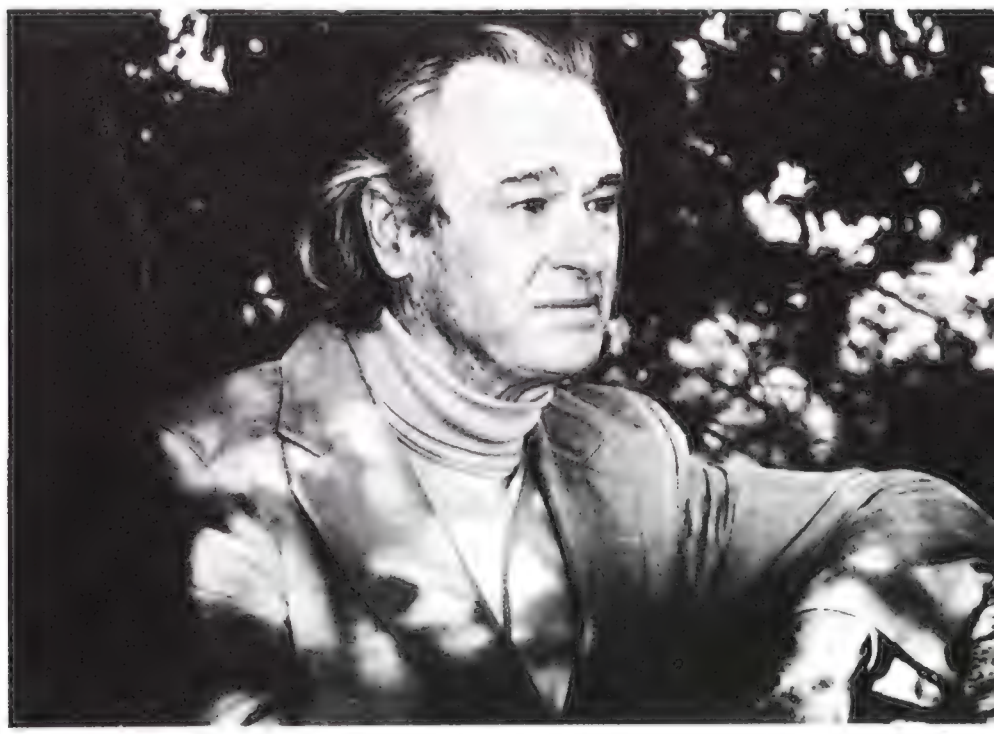
Not that Mead's work had never before been challenged. A number of her colleagues have taken issue with what they consider her theoretical shortcomings, her arrogance, and her excessive fondness for generalizations. Deborah B. Gewertz in *Sepik River Societies: A Historical Ethnology of the Chambi and their Neighbors*, to be published by Yale University Press in June, disputes some of Mead's New Guinea conclusions. But nobody ever dissented from Margaret Mead with such diligent vehemence as Derek Freeman. "He drew a bead and got her where she was vulnerable," says another anthropologist, "but it was a cheap shot."

Disparity between Samoas of Freeman and Mead

The shot, cheap or otherwise, was first aimed because of the disparity between the Samoa which Freeman got to know during his own several field expeditions there, beginning in 1940, and the Samoa he had read about, at first with unskeptical admiration, in the writings of Margaret Mead.

Derek Freeman's book costs $20; Margaret Mead's *Coming of Age* sold for $3 when William Morrow published it, in 1928, with a blurb on its jacket from the biologist George Dorsey, wondering "if we shall ever be as sensible about sex as the Samoans are." At once the young woman's name became linked in the public mind with two provocative ideas: easy, carefree sex, and the theory of cultural relativism, which Freeman in his new book refers to as the "Boasian paradigm"—

On 1925-26 visit to Samoa, young Margaret Mead showed "kinship" with people whose lives she studied.



Mead critic, Derek Freeman, says she gave Americans exactly the kind of myth they wanted to believe in.

the firm conviction of Franz Boas, Mead's professor and mentor, that the best way to explain human behavior is in cultural, instead of biological, terms.

Havelock Ellis, celebrated in the 1920s for his own writings on sex, called Mead's book not only "fascinating" but "instructive" and "valuable," and added that "The great master in these fields is Professor Malinowski, and I could not pay higher tribute to Miss Mead than to mention her name in connection with his."

The great master Bronislaw Malinowski, then at the University of London, was about to publish his own book, *The Sexual Life of Savages in North-Western Melanesia*. Although he would belittle Mead's work later on grounds that it was too impressionistic, he hailed her first book as "an absolutely first-rate piece of descriptive anthropology" and as "an outstanding achievement." H. L. Mencken, in *The American Mercury*, developed at some length his own view that her "precise, scientific pages" brought the South Sea islanders vividly to life; a Samoan swain, said Mencken, "avoids repression by devoting himself to light and transient loves."

Freda Kirchwey told her *Nation* readers, to whom she highly recommended Mead's book, that they would "probably be astonished to discover how like a South Sea island that South Sea island can be. . . . Sex experience is frequent before marriage, almost to the point of promiscuity." Mead does create a tantalizing vision in her book of "a scheme of personal relations in which there are no neurotic pictures, no frigidity, no impotence, except as the temporary result of severe illness, and the capacity for intercourse only once in a night is counted as senility."

Jane Howard is finishing a biography of Margaret Mead to be published by Simon and Schuster in 1984. She wrote this report especially for SMITHSONIAN.

But the Samoans whom Derek Freeman got to know, in visits beginning in 1940 and amounting to a total of six years, did not match these descriptions. Far from being as bland, uncompetitive and abandoned as Mead said her Samoans were in 1925-26, Freeman's, encountered in later decades, were riddled with guilt and other neuroses, given to adolescent suicide, prone to violent crimes and fiercely jealous and possessive. They had one of the world's highest rape rates, and placed as high a premium as royal matchmakers seem to on the cult of virginity.

Tracing their worldwide reputation as lustful, slaphappy simpletons directly to the work of Margaret Mead, they appealed to Derek Freeman, who like many visiting white men had been given the honorary status of a Samoan chief. Couldn't he do something, he says they asked him, to set things right? Couldn't he tell the world about the real Samoa?

Freeman's informants were Western Samoans, most of whom he met as a married man and father, two or three decades after Margaret Mead met hers 140 miles away in American Samoa. (They gave her the title of ceremonial virgin; she did not tell them she had left a husband at home.)

Freeman scolds Mead for never having set foot herself in Western Samoa. The people of Sa'anapu, his village, were direct descendants of some migrants from her island, which he eventually and methodically visited. Dr. Bert Marian, an American physician who for four years has been practicing in Ta'ū, Mead's village, says young people there must be off the streets at 10 P.M., "and if you mess with your boyfriend at three or

four in the morning you can't imagine how many dogs would notice you, and howl. This simply isn't a wild, promiscuous place, and apparently it never has been."

Dr. Eleanor R. Gerber, who spent 15 months in American Samoa beginning in 1972, doing fieldwork for her dissertation on emotions, found that "Samoans, like many Pacific people, give a surface impression of being very sweet and calm, with a soft approach to life, which you only slowly realize can be a way of keeping you out." Samoans are said to have a way of telling visitors what they think they want to hear, and an added fondness for teasing, particularly sexual teasing.

It does not seem out of the question that Margaret Mead, who was not yet 24 when she arrived in Samoa and who had a lifelong tendency to be gullible, could have been the object of such teasing. Surmising that she wanted to hear about their sex lives—hardly a subject they were accustomed to discussing with strangers—her informants obliged, with what may have been a mixture, intentional or mischievous, of fact and fancy. Mead, in 1925, may not have known how to filter the one from the other. "But to crucify her 58 years later for her mistakes on her first field trip," says one of her colleagues, "is a little like an intellectual pygmy taking on an intellectual giant."

What she was doing, after all, was dazzlingly original. Her project, as her colleague Robert H. Lowie put it, was "incomparably subtler than those which usually

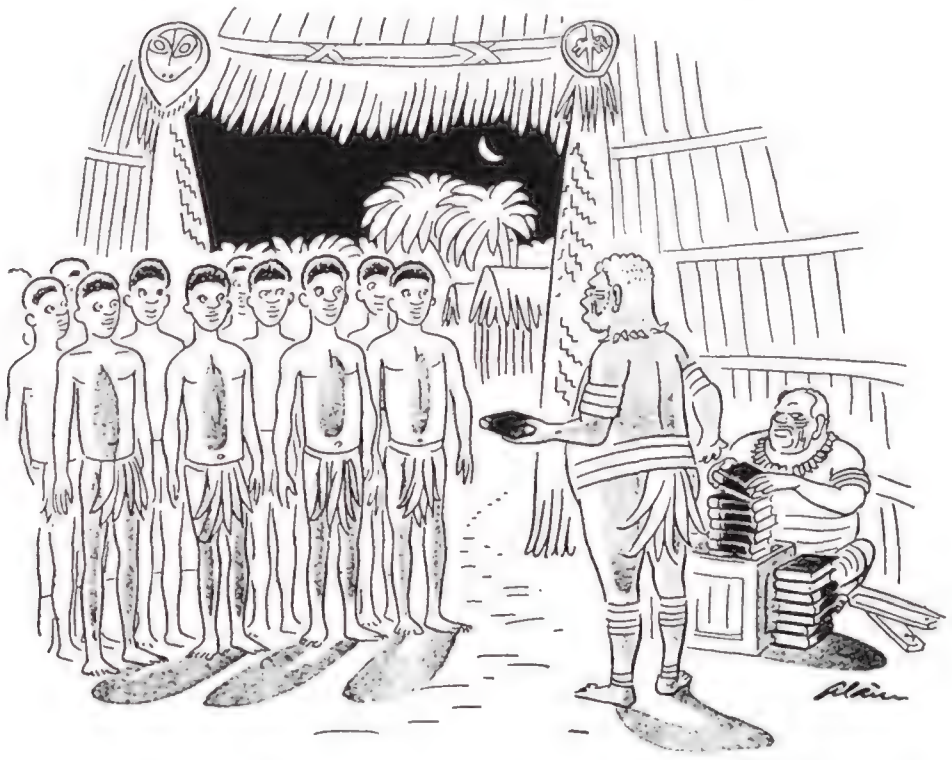
At the American Museum of Natural History, Mead gripped staff that was her emblem in later years.

engage the ethnographer's attention." As she wrote on her application for a National Research Council fellowship, her task would "involve working almost entirely with women, and should therefore add appreciably to our ethnological information on the subject of the culture of primitive women."

It probably would have helped if Mead had had someone to compare her impressions with: this was the first and only field trip she ever made without another anthropologist. The nearest thing she had to a soulmate or sidekick in early 1926 was William Edel, a Navy chaplain who had been sent from fleet headquarters in Pago Pago to spend two months in Ta'ū as hurricane-relief administrator. He was sent there because, unlike most officers, he knew at least a little Samoan, and there was urgent work to be done with native crews. A hurricane on New Year's Day had devastated every building on the island except for the home of Edward Holt, the Navy pharmacist's mate, his wife, their children and an enlisted man who worked the radio. Margaret Mead had chosen to live with these people instead of with a native family, and William Edel was quartered there, too.

Mead and Edel both had Phi Beta Kappa keys and good educations, but that did not mean they liked each other. It was clear to them both that they would not have elected, under other circumstances, to spend evening after evening playing bridge with the Holts. Some evenings, however, Mead would invite Edel to her room and urge him to tell her whatever he had been learning of the Samoan culture. As fast as he spoke, she took down what he said in her notebook, and did

Drawing by Alain; © 1956 The New Yorker Magazine, Inc.



"Young men, you've now reached the age when it is essential that you know the rites and rituals, the customs and taboos of our island. Rather than go into them in detail, however, I'm simply going to present each of you with a copy of this excellent book by Margaret Mead."

Snapshot taken during Mead's original stay in Samoa shows her in native garb, attended by adolescents.

not appear to notice that all the while he was holding a fan before the single naked lightbulb in the room, to shield her eyes from the glare.

But if Mead did not thank him for this small, repeated courtesy, Edel still had "a high opinion of her intellectual ability, probity and clarity. She went about her tasks with great enthusiasm and dedication, and sometimes worked for ten or 15 hours a day." Now approaching his 90th year, Edel still vividly remembers an incident, described in *Coming of Age*, when a post-mortem Caesarian section was performed with a bush knife on a Samoan woman who had died in her eighth month of pregnancy.

The fetus was cut from her belly as she lay in her shallow open grave so it could be buried in her arms, instead of being reborn later as an avenging angel. Mead, Edel remembers, stood close among the Samoan mourners to witness this bloody event, discussing it with them in what he recalls as pretty fair command of their own language. "This was one of the very real ways," he says, "that she showed she was not an outsider, not an intruder." In her book, Mead used this incident to help show how well-acquainted her informants were with the harsh realities of life and death.

This, she thought, was part of the reason they got through adolescence without the pain and clumsiness Americans and Europeans assumed were inevitable during that stage of life. Her message was clear: if the Samoans could come of age gracefully, then so might each of us, if born among them. Therefore we could not blame our troubles on our genes.

Derek Freeman maintains that this was a message Americans desperately wanted to hear in the late 1920s; Mead's first book sold millions of copies and was translated into many languages, and her later ones did well, too. By the 1950s, when she had become an internationally recognized, frequently quoted authority on adolescence, on children, on women, on cultures, on mental health, on almost everything, it did not occur to anyone to question her original conclusions about Samoa.

These conclusions, says Freeman, had come to be regarded "as a proven fact which demonstrated, beyond all question, the sovereignty of culture." In Freeman's view the Boasian paradigm, carried on by Franz Boas' most celebrated protégée, "had an enormous effect on the *geist* of 20th-century America," encouraging a whole generation to come of age with credos like "If it feels good, do it," and "Here we are, products of our culture, and we have to make the best of it, so that's that." The doctrine of cultural relativism, he writes, "maintains that human cultures are not open to any kind of critical evaluation."

It is on this point, say Mead's defenders, that Derek Freeman most misrepresents the author of *Coming of Age*. "She did not believe in dichotomies," says one of her friends, "and this is a false dichotomy which she'd have regarded as nonsense. If there's anything she wasn't, it's an ideologue. To call this issue a debate between two ideologies is ridiculous, as far as she's concerned. What she did emphasize is that we are very plastic, that learning starts very early, that there is a huge range of possibilities for ways we can use our genetic inheritance."

"She was never stupid nor dishonest"

Far from ignoring the influence of biology in determining the life of any individual, Mead repeatedly had her eyesight and hearing tested so that their effect on her own researches could be measured. She learned all she could about the genetic patterns in her own family. Nor did she head for Samoa, insists Luther Cressman, now University of Oregon professor emeritus of anthropology and in 1925 Mead's husband, to prove a point, or with a bias: "That idea is absolutely ridiculous; she went to *validate* a hypothesis, not to *prove* one; there is a vast difference. Margaret was many things but she was never stupid nor dishonest."

Ruth Bunzel, also a protégée of Franz Boas, insists that Boas did not send Margaret Mead to Samoa, or anyone anywhere, to bring back a preordained message. Boas would not have held it against her, that is, if Mead had returned from her trip to Samoa to report that girls there were just as vexed by adolescence as girls elsewhere.

"One of the exciting things about being a young anthropologist in the 1920s," Bunzel adds, "is that we were starting to focus on problems rather than just on

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descriptions, and we were also concentrating on individuals rather than on institutions." Ethnography in 1925 was a groping, half-developed art; Bunzel herself had scarcely known what she was doing the previous summer when, at Boas' suggestion, she spent a working vacation in Zuni, New Mexico, doing her own first fieldwork, which resulted in an esteemed book, *The Pueblo Potter*.

Little formal training in field methods existed anywhere, and when Columbia University offered its first course in the subject several years later, Margaret Mead was among the first to teach it. As to the charge, implicit in Freeman's book, that Mead did not stay long enough in Samoa to learn what was really happening, for her to have stayed longer would have been impossible: there just wasn't money. "Anthropology in those days was very badly funded," says Bunzel. "In fact it was Margaret, by drawing public attention to what we were trying to do, who, more than anybody else, later helped attract the financial support of foundations." Undeniably *Coming of Age* was, as Mead pointed out in its 1973 edition, "the first piece of anthropological fieldwork which was written without the paraphernalia of scholarship designed to mystify the lay reader and confound one's colleagues."

Not another nature vs. nurture debate

Boas had tried to talk Mead out of going to Samoa at all; there were plenty of nearer, cooler places, he told her, where she could study the same problem. In any case, he wrote to her, if the climate in Samoa proved too oppressive, she could and should come straight back to New York. But coming home before the job was done was not Margaret Mead's style.

Many say it is beside the point to use Freeman's book as an excuse to revive the ancient debate about nature and nurture, and caution against oversimplifying; Mead for most of her career was no more a tunnel-visioned cultural relativist than Freeman claims to be a card-carrying biological determinist.

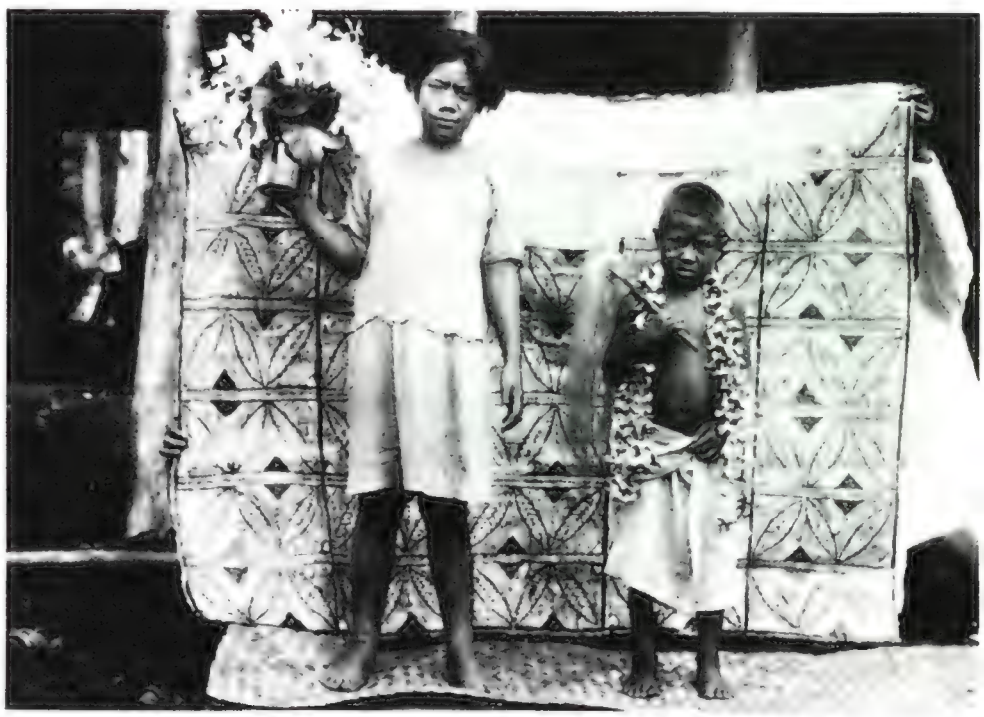
In his wallet and on the dashboard of his car, says Freeman, are pictures of the letter "Y," the Greek letter upsilon, signifying choice. We all, he says, must choose our fates from a synthesis of "the genetic and the exogenetic," a notion it is hard to see as controversial. "Maybe we weren't ready to deal with this question in 1925," to quote Donald Tuzin of the University of California at San Diego, "but why should it be radical now for anthropology to go beyond determinism?"

Yet some see Freeman as the pawn of right-wing forces bent on reviving the racism they think implicit in biological determinism. Others suggest that Freeman is a classic male chauvinist. Lenora Foerstel, who in 1953 accompanied Margaret Mead on the second of Mead's numerous field trips to the Admiralty island of Manus, thinks that the prominence the press is giving to Freeman's book proves just what last year's defeat of the Equal Rights Amendment proved: that "we can't tolerate a monumental female figure."

On the contrary, Freeman retorts, he himself thinks that "women are wonderful; anthropology should be the queen, not the king, of social science—the king would strut about, the queen would sit demurely. Women," he says, "have a special kind of common sense. Wisdom is always a woman. Tantric Buddhism puts the female principle first. I'd be very relieved to find that God was a woman. I want to have a worshipful attitude toward women; they have so much to tell me that I can learn from no other source."

To charges that it was hardly chivalrous of Freeman, let alone worshipful, to wait until Mead was dead to print his refutation of her work, he replies that she had known for years how radically his findings differed from hers. Their only meeting, in 1965, was "tense, but we had a very dignified exchange of correspondence." Mead alluded to Freeman's charges in the 1969 edition of her 1930 *Social Organization of Manu'a*—one of her respected ethnographic works—and said she looked forward to seeing how he would deal, in his fieldwork, with the problems she had faced in hers. And not until 1981, he adds, was he granted access to vital High Court records which he needed to see to supplement hearsay evidence of what Samoan behavior had been in the middle 1920s.

Lowell D. Holmes of Wichita State University in Kansas, who carefully restudied Mead's work in Ta'ū, says that this claim of Freeman's is outrageous: "I my-



Two of Mead's Samoan subjects bear flowers, as backdrop is held in place for an "idyllic" portrait.

WINE & FOOD

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self had access to those very records in 1954, and you have to realize what terrible records they are: they say, for one thing, that the number-two cause of infant death was arteriosclerosis!"

Timothy Asch, the ethnographic film maker who now teaches at the University of Southern California, studied with Mead at Columbia and was a colleague of Freeman's at ANU in Canberra. "We've waited for Derek's book for a long time," says Asch. "He's a wonderful, preacherlike person, he has a pulpit mentality; I'm happy for him that his book is published; what he says in it is probably true, but so what? It certainly doesn't change my impression of Margaret as a real heroine and a great figure."

Joseph Theroux, a Bostonian who lives and writes in Pago Pago, the capital of American Samoa, dismisses Derek Freeman as an "academic barnacle, living off Mead's reputation." Timothy Asch is not so sure. "Margaret," Asch says, "reminds me of a huge wave that washed over our lives, as compared with a rock. The wave washes off, the rock remains. Derek may well be remembered for his work on the Iban in Borneo much longer than Margaret will be for any of her books."

But Mead's ethnography, awesomely meticulous as most of it was, may not be what saves her from, to use Freeman's Joycean image, "doing a 32." An answer, as the Danish writer Isak Dinesen once said, is a rarer thing than is commonly imagined. Maybe answers are not as important as is commonly imagined, either. Maybe questions matter more. And if Margaret Mead in her innocent early travels was guilty of some wrong answers, she kept on asking what many strongly feel were the right, the most urgent, questions. The question Ruth Bunzel says Mead took to Samoa was one she kept asking all her life: not "How can we understand others?" but "How can we understand ourselves?"

Derek Freeman does not expect, ever, to meet any ghosts, but he thinks he knows what would happen if he were to encounter the ghost of Margaret Mead. "It —not 'she' but 'it,' ghosts don't have genders—would pat me on the head, not the back but the head, and repeat what she said to me at the end of one of her letters: 'Anyway, it's the work that matters.' "

No one has filled the place in the public mind that has been vacant since Margaret Mead's death on November 15, 1978. As she said herself, around the time of her 75th birthday, "I do expect to die, but I don't plan to retire."

She hasn't.

In present-day Samoa, no longer an isolated paradise, a young woman's coming of age has a universal look.

On return visit to Samoa, 1971, Mead continued search for understanding of ourselves, through others.

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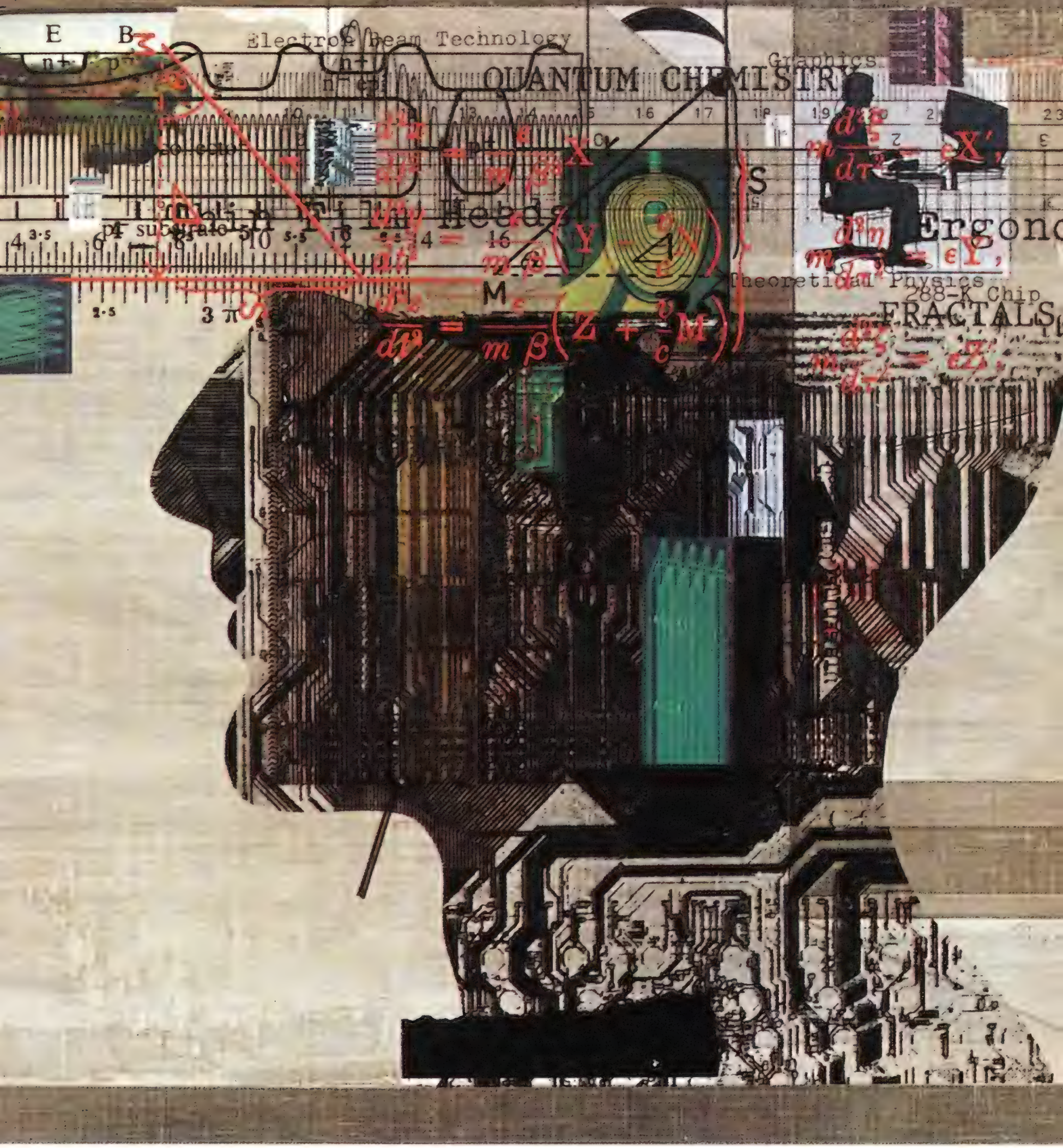

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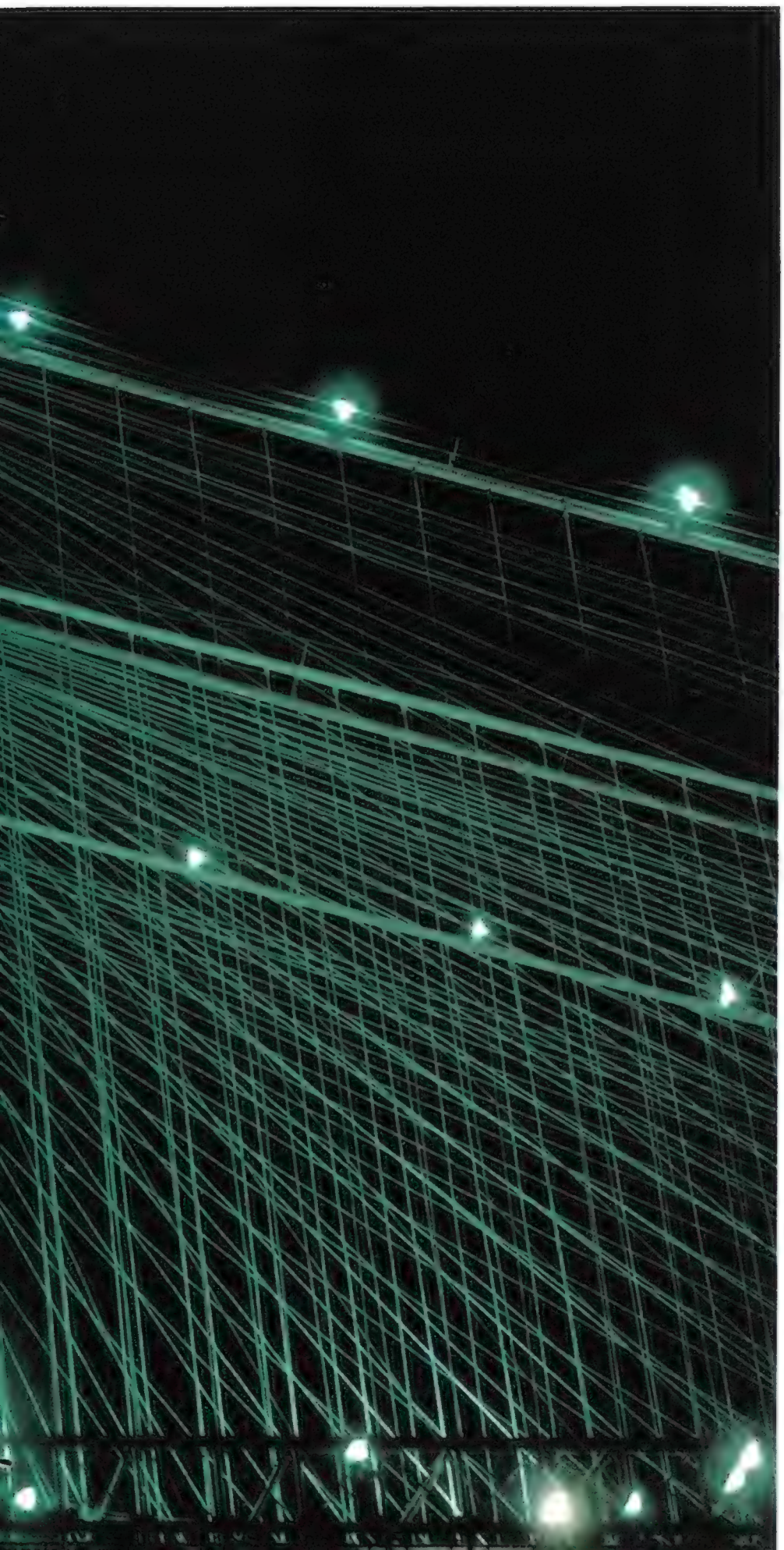
By Richard Stengel

‘Not one shall see it and not feel prouder to be a man’

Brooklyn Bridge, venerable, intricate, gleams as useful and beautiful as ever in a garland of 100th-birthday portraits



To anyone who navigates the labyrinth of dingy streets leading up to it, the bridge, at first, has an odd, toylike look. But from closer in it invites the pedestrian down a corridor of cables into a splendid, spidery embrace. Walking across, your eyes scan the elegant webs of steel, are led upward by the graceful sweep of the four huge cables that carry the bridge's weight to the great granite towers. Exactly at midpoint, halfway between Brooklyn and Manhattan, the anxious whine of cars fades away. Suddenly you realize you are standing at the heart of an industrial-age poem, the modern equivalent of a Gothic cathedral, an often dreamed of but rarely realized balance between form and function. As this collection of birthday photographs shows, in the spring of its 100th year the Brooklyn Bridge is not only hardworking and efficient, it is a breathtaking spectacle still.

Its creator, John Roebling, a visionary engineer and immigrant from Prussia (SMITHSONIAN, October 1972), had to defy not only gravity but considerable public skepticism to build it. The engineering problems were dramatic—a bridge far longer than any yet constructed, and, at its center, 135 feet above the treacherous waters of the East River so that tall sailing ships could pass beneath it. What Roebling proposed in 1867, when he was named chief engineer of the nascent project, was a suspension bridge with a central span of 1,600 feet, half again as long as that of the longest bridge yet built (which happened to be one he had built over the Ohio at Cincinnati). Its four giant cables, hung from two huge towers set on caissons in the riverbed, were to support a deck to carry four horse-carriage lanes, as well as two cable-car tracks and a raised promenade or boardwalk.

How was that to be done? By using steel instead of iron for the first time in the main cables and in the suspenders and diagonal stays, steel being far stronger than the conventional wrought iron. To many, Roebling's plan for a bridge of this scale required considerable suspension of disbelief. But there was no alternative. Roebling dispatched his 30-year-old engineer son, Washington Roebling, to Europe to study the latest developments in bridge-foundation technology. The young man had barely returned in 1868 when his father, working with a field crew at the Brooklyn ferry slip, accidentally got his foot crushed, contracted tetanus and died. He was the first casualty of a bridge that eventually cost the lives of 20 men.

His father's death left Washington, then 32, in

Against a night sky the webs of cable that collectively bear the bridge's weight extend out from a tower like giant dragonfly wings spreading into darkness.

Photographs by Bill Hine

charge. For the next 14 years the struggle to complete the bridge would increasingly contain elements of epic drama. The hero, chief engineer Roebling, battled not only the forces of nature but the perverse power of crooked contractors (who supplied 221 tons of defective wire), rapscallion politicians, prejudiced newspaper editors, critical engineers and, ultimately, a mysterious affliction that kept him away from work for months at a time.

The first wooden caisson was launched from a shipyard north of Brooklyn in 1870, towed into place and anchored. The first granite blocks of the tower were placed on the caisson roof, causing it to sink into the riverbed. Men entered the caisson to dig through layers of mud and sand. The increasing weight of the tower drove the caisson down until suitable foundation material was reached. Compressed air was pumped into the caisson to drive out the water and permit teams, mainly Irish and Italian laborers, to work, stripped to the waist as they dug in a purgatory of heat and enervating air pressure. To maintain that pressure there were iron air locks above the workspace.

And as the caisson descended deeper and deeper, more and more workmen, after rising rapidly to the surface through the air locks, found themselves afflicted with savage cramps, painful joints, nausea. The ailment, officially called "caisson disease," sometimes proved permanently debilitating. Workmen dubbed it "the bends."

Roebling, who often spent 24 hours at a stretch in the caisson, suffered a terrible attack. Eventually he managed to direct the works from home, supervising by telescope from his bedroom in Brooklyn Heights.

By 1876 the twin towers were finished, looming majestically 276 feet above the East River. Moored to his bedroom nearby, Roebling watched as the bridge's main cables, each composed of 5,296 galvanized-steel wires (14,361 miles of it), were strung from anchorage to anchorage over the towers. He watched as the first vertical suspenders were hung down like harp strings from the main cables to support the deck, to be followed by the intersecting diagonals from the towers—all forming the gossamer network that was the striking signature of his father's design.

For the bridge's opening, on the cloudless afternoon of May 24, 1883, the river was densely packed with spectator boats. A wooden platform put up on the Brooklyn side was packed with politicians. Amidst all the pomposity and sanctimony emitted on that day, only the words spoken by Congressman Abram S. Hewitt produce a resonance that continues: "Not one shall see it and not feel prouder to be a man."

From the late 1890s to the early 1950s, the two modes of rail travel on the bridge were the cable car (gradually absorbed by the Brooklyn elevated), and the streetcar. The El closed down in 1944, the streetcar in 1950, and the automobile became king. By 1954 the bridge deck had been rebuilt with six lanes of highway replacing the original four. To meet the growing traffic, two other bridges had been built upriver from the Brooklyn—the Williamsburg in 1903, the Manhattan six years later. But it is Roebling's durable masterpiece that has always stirred poetic imagination. For Hart Crane the bridge was a "steeled Cognizance," a metaphor for the beauty and strength of America: "O harp and altar, of the fury fused,/(How could mere toil align thy choiring strings!). . . ."

In thick fog, three of the bridge's cast-iron lamps stand silhouetted against the Gothic archways of the

Richard Stengel, Rhodes Scholar and confirmed bridge watcher, is a staff writer for Time *magazine. This is his first article to appear in* SMITHSONIAN.

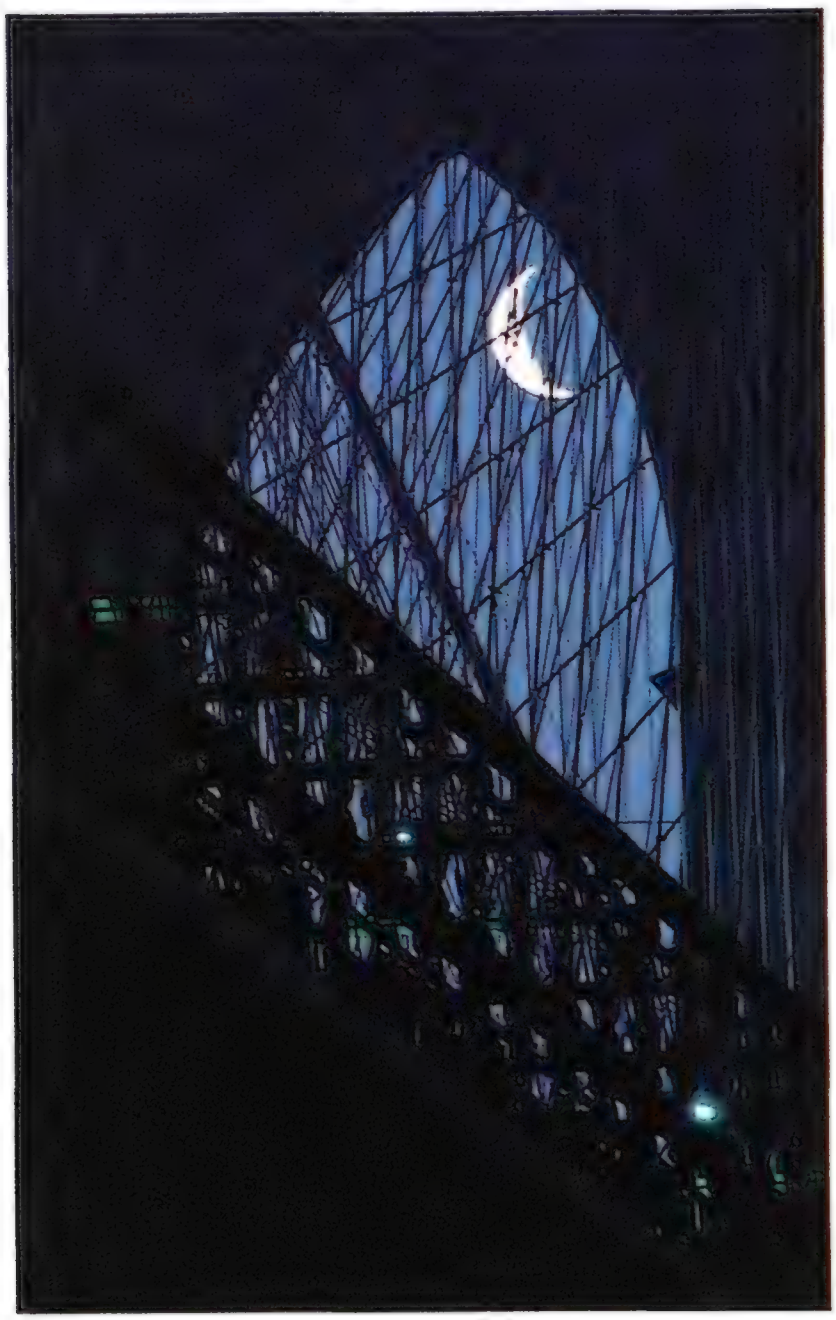
tower. Most of the original 70 brackets remain, though the old electric arc lamps have been replaced.

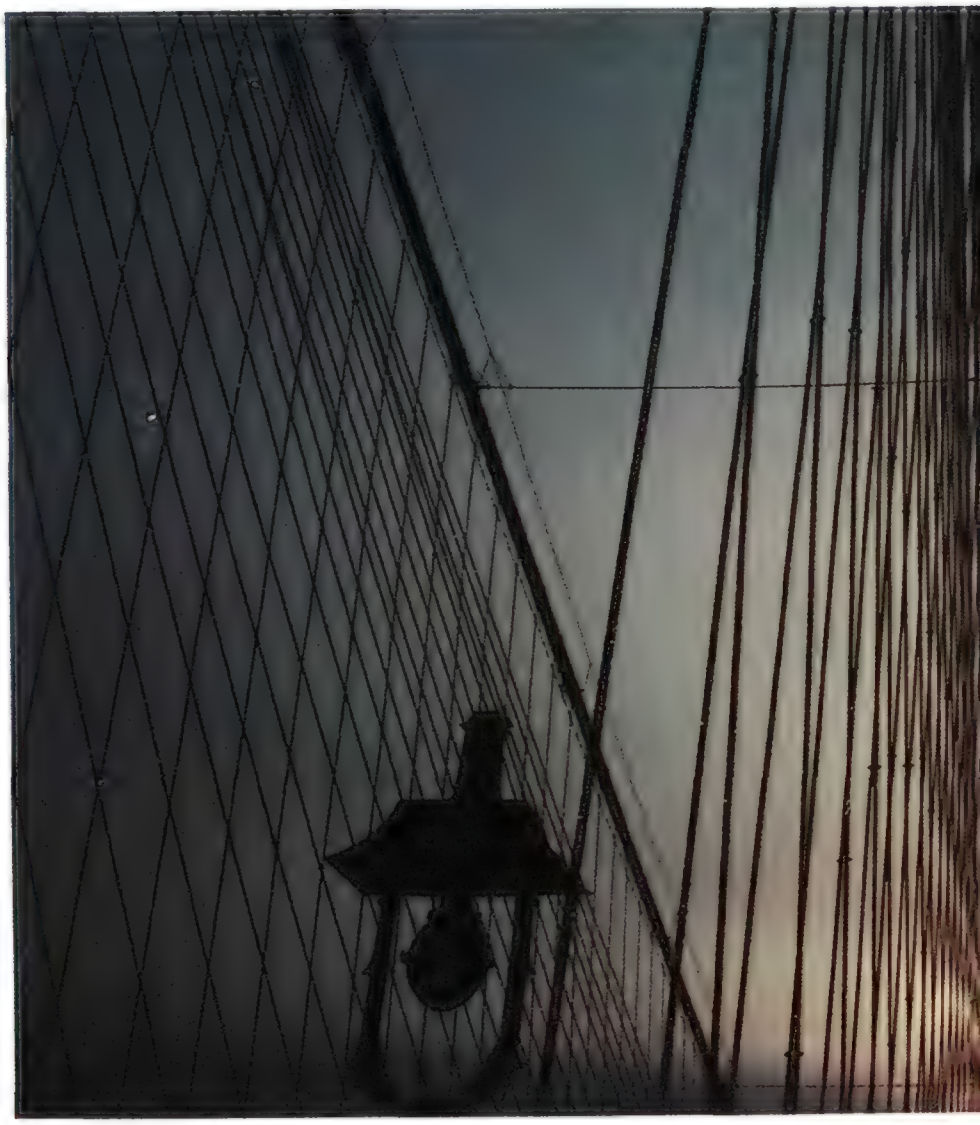
The Brooklyn Bridge cost nearly $18 million to build. Today the labor alone, at the current rate of $100 per man per day instead of $2.50, would be close to $700 million. It takes a team of 30 painters 18 months to repaint the bridge, but at age 100 it has no major inherent design flaws. Roebling's four huge cables—each 15¾ inches in diameter and designed for 19th-century horse-drawn and moderate rail traffic—now safely support more than 100,000 cars a day (no trucks allowed). They pass back and forth across the bridge with hardly a tremor, along with some 1,500 pedestrians and nearly 1,000 bicyclists.

The old bridge is now being rehabilitated under a ten-year project that will cost well over $100 million. When that is done, by about 1988, John Roebling's bridge will be ready to serve for another century.

View toward Brooklyn from east tower shows cables, six-lane divided highway, with a promenade between.

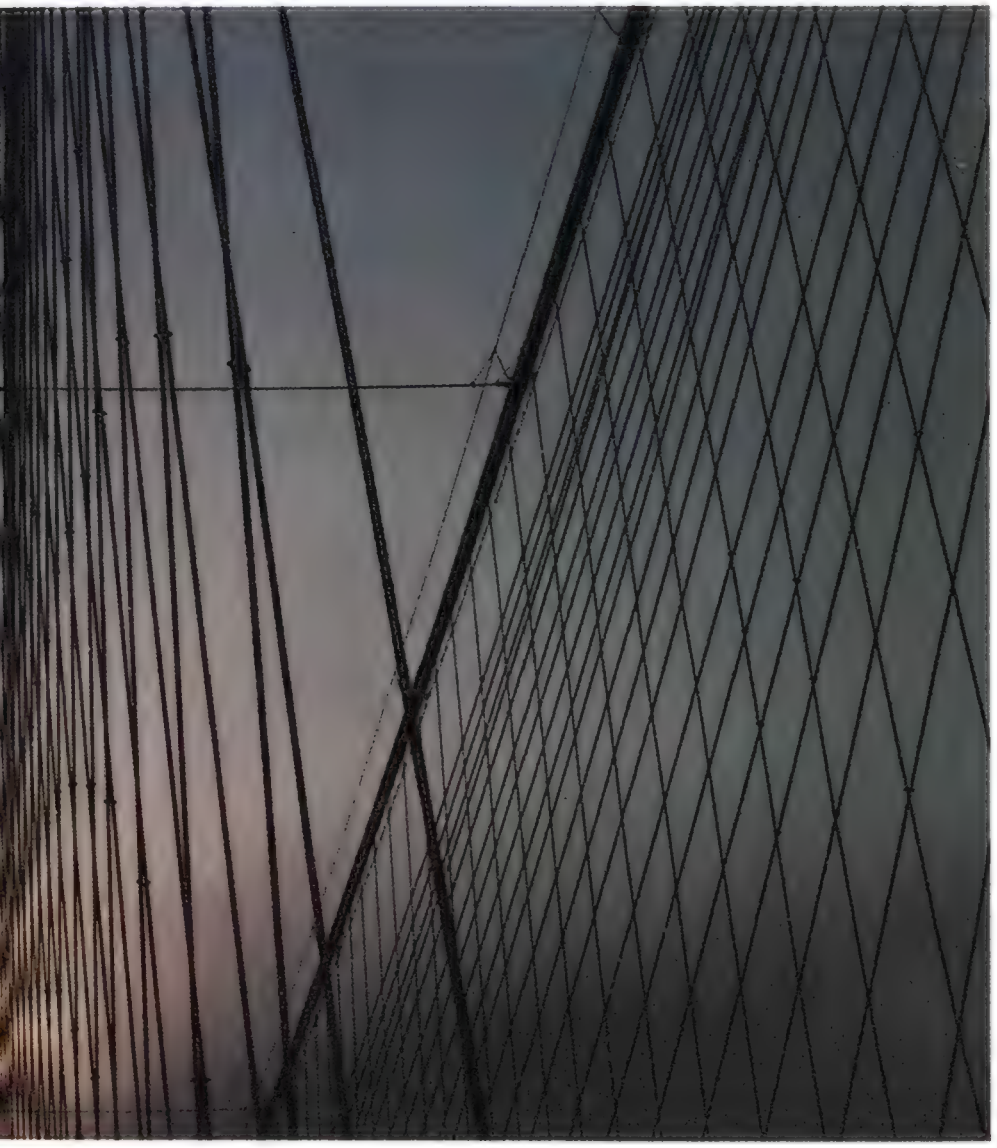
Looking up the East River from New York Harbor, much of the bridge's 1,595.5-foot span is visible, as well as the busy Brooklyn waterfront and a tower of Manhattan Bridge (right), built in 1909. Beyond it





Cathedral-like aspect of Roebling's design shows in archways (left and far right), and in the cable wires;

is the Williamsburg Bridge, constructed in 1903. Because tall ships had to pass under Brooklyn Bridge, to and from nearby navy yard and other points, span at center had to be at least 135 feet above water.



bridge is now undergoing a ten-year rehabilitation program that will cost in excess of $100 million.

Spectacular 276-foot towers are shown at sunrise (left) and dusk; the towers were built on huge caissons

(102-by-170 feet) made of heavy timber, then sunk deep into the bed of New York's fast-flowing East River.

Morning rush-hour traffic is bound both ways; cars at left are headed in the direction of Manhattan.

Beneath the bridge and backed by spectral grid of steel, two disputatious gulls squawk and flutter.

By Adele Conover

Getting to know black bears—right on their own home ground

Lynn Rogers spent years crawling into dens to learn just how their matriarchal society works and what they need in order to thrive

As the hawk sees it, northeast Minnesota's Superior National Forest is a rolling green carpet patterned with hundreds upon hundreds of shimmering lakes and laced with the silver threads of rivers. The forest serves as a spectacular laboratory for wildlife biologists. It was here that one of them, Dr. Lynn Rogers, learned to ride black bears, an activity he does not recommend to others. Based at a U.S. Forest Service research station a few miles outside the town of Ely, Rogers and other researchers have studied Superior's bears, timber wolves, white-tailed deer and beavers.

Rogers, a husky, bearded six-footer, has been watching bears in Minnesota for 15 years and in the process has come up with new information about their lives in that region—and their reactions as well. For example, he says, "I used to think that the best way to restrain an angry, partially drugged bear was to straddle its back and hold tight to the sides of its head. But then one day I had captured a bear in a barrel trap. I found that some kids had gotten there first and had tormented the poor animal with sticks. By the time I showed up, that was one very unhappy bear.

"I gave him a shot, waited, then opened the trap door to discover that the bear was wide awake and mad as blazes. So I jumped on his back and reached out. I remember it was like watching a film in slow motion. As my right hand reached forward that big head swung around and my hand vanished into its mouth. Chomp. Then the same thing happened to my left hand. Chomp. Fortunately, that bear was a lot more interested in traveling than in a light snack, but the lesson cost me quite a few stitches."

Rogers feels "his" bears—in a typical year he keeps tabs on 35—are benefiting their species and ours. Better knowledge of how they live enables managers of national forests and parks to accommodate them better, and better numbers on their birth and death rates help state game departments to know better how many can be "harvested" by hunters. At the same time medical researchers are learning things, especially from blood samples, that can aid humans.

People tend to think of black bears as those cute roadside beggars in our national parks. But black bears (*Ursus americanus*) are not a bit cuddly. The average adult male weighs about 300 pounds. Both male and female can climb a tree with the agility of a cat and have been clocked on the ground at 30 miles per hour (a human sprinter can reach 28). Naturally shy but also amazingly strong, a black bear is nothing to fool with if injured or menaced.

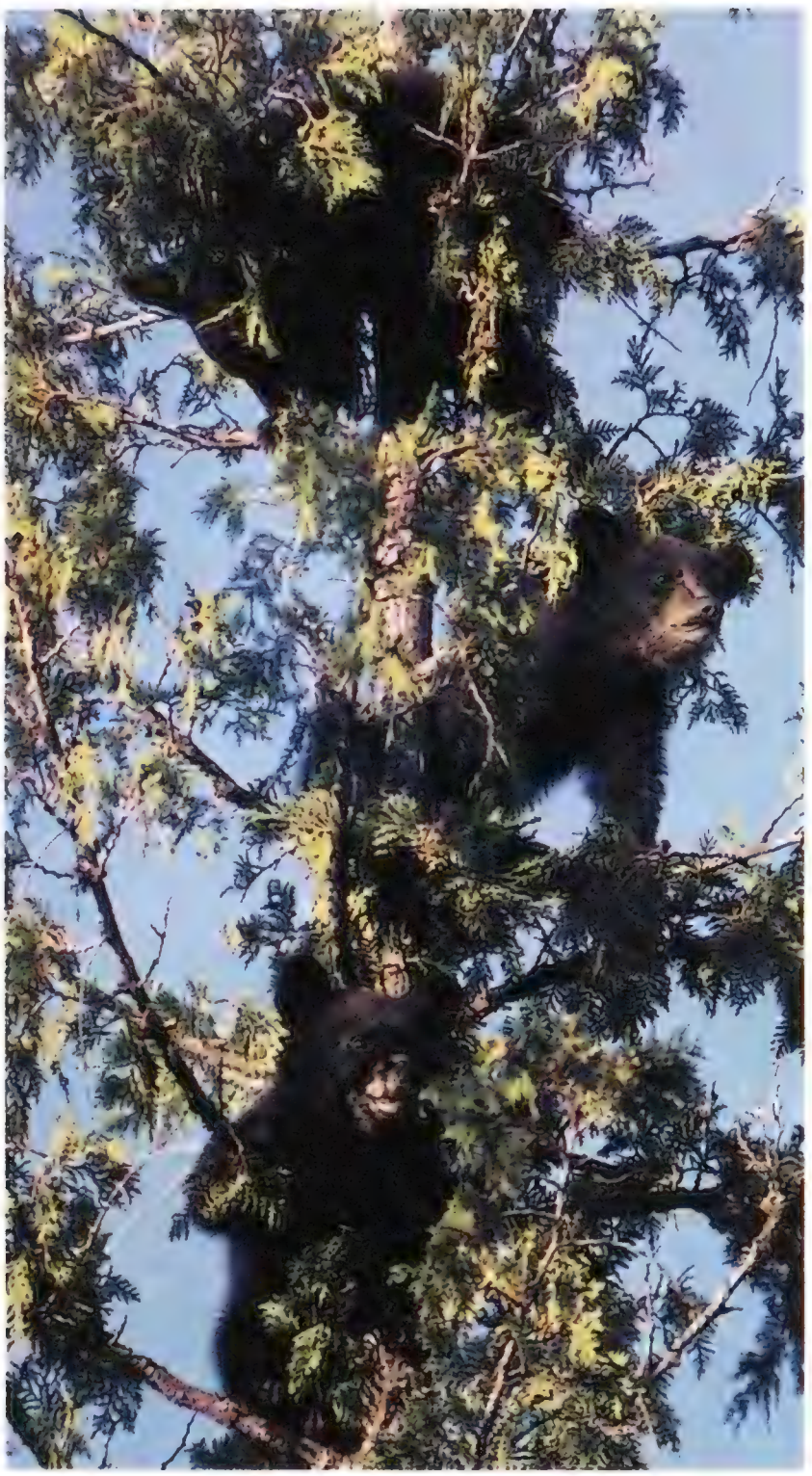
Unlike its imposing relation, the grizzly, the black bear is not considered to be a threatened species by the U.S. Fish and Wildlife Service. Responsibility for management and conservation of black bears rests with the individual states, where the numbers vary wildly. There are marginal populations in Alabama and Mississippi; thriving ones in Pennsylvania, New York and Maine. No bears can be found in Rhode Island, Nebraska or Illinois, but in states like Oregon and Washington they are considered plentiful enough that thousands are legally shot by hunters each year.

"We still have a viable black-bear population in at least 23 states and the Canadian provinces," says one experienced bear researcher. "It's an amazingly adaptable animal if people leave it alone. The major concern is disappearance of habitat . . . it's a matter of protected areas for the bear."

Bears spend much of their time looking for food,

Lynn Rogers cuddles two black bear cubs, each about four or five pounds—the progeny of a "friend."

Black bears on their home ground



Young bears wait safely ensconced up a tree while their mother eats. Curved claws make climbing easier.

and they are not choosy, gorging on insects, berries, nuts, small mammals, ham sandwiches and garbage with equal relish. Despite this, the chief natural factor limiting a bear population is the food supply. Rogers has found that contrary to popular belief, so-called "garbage bears"—those that visit town dumps or campsites—do not lose their ability to forage successfully for wild foods but are simply supplementing their diets with easy pickings. In fact, these enterprising bears grow faster, mature sooner and reproduce earlier than those that depend solely on wild foraging. Rogers has also found that dump-fed bears are the strongest and largest in the population. He and his crew once captured a male that weighed in at 611 pounds.

But easy living for the bears carries a price: those that stalk garbage dumps are easier targets for hunters, and those that visit camps may terrify—if not injure—visitors. Some state wildlife agencies capture "nuisance" bears that have become too chummy with people and cart them off to less-populated parts of the forest. The removal programs do not always work; bears released 100 miles or more from their place of capture have reappeared in their old haunts.

During one summer he spent exiling pesky bears, Rogers learned one of the basic techniques of his future work: how to capture a bear without harming it. Most often, this involves the use of a barrel trap—two oil drums welded end to end like a section of oversize pipe, one end fitted with a trap door. The trap is usually baited with beef, which bears like. Once it is caught, an animal is sedated, weighed, tagged and trucked away, a procedure that Rogers repeated 28 times his first season in the woods.

A new picture over the years

Rogers' choice of bears as his special field complicated his life no end. Bears have slow reproduction and growth rates, and their life cycle from birth to reproductive maturity in northern Minnesota averages six years. The accepted lore at the time was that black bears were sedentary, solitary animals, but Rogers began to perceive a far different picture. The difficulty was that the years were going by, and graduate studies are not supposed to take so long.

He had not completed observing one full life cycle when his research funds dried up. Broke but persistent, he went hunting for alternate sources of support, persuading the National Rifle Association and the Boone and Crockett Club, among other groups, to fund his research as beneficial to hunters.

His graduate studies took nine years in all, but during that time, Rogers established that black bears are highly territorial, quite mobile and have a rigidly matriarchal society. It is the mother bear's show. A

A subadult, two to three years old, stands erect
so it can better see and smell an approaching animal.

mother parcels out parts of her own territory to her daughters, who move into their own subdivisions at the age of one-and-a-half years. They live under their mother's protection for another year or so, then gradually expand their subdivisions into full-size territories. The mother accommodatingly shifts her own boundaries to make room. When males are some two- or three-and-a-half years old, on the other hand, they set out to find their own turf, occasionally moving as far away as 100 miles to establish a foraging area that overlaps the territories of eligible female bears.

Reproduction is the essence of Rogers' work. His field is population studies: how a group of organisms, in this case black bears, reproduces and maintains itself. To find out, he patrols 100 square miles of wilderness, which is not always easy. Winters in the north woods are hard, and summers spawn plagues of mosquitoes, black flies and no-see-ums—living clouds that test the defenses of heavy clothing, tightly bound cuffs, netting and the most potent insect spray. Through the seasons, Rogers has skied, snowshoed, canoed, snowmobiled and flown in light planes, but most often he gets about in a dusty pickup truck or on foot.

Each bear he traps is fitted with a loose radio collar. The battery-powered collar transmits a distinctive signal that carries for a number of miles; the signal is picked up by a small receiver fitted with a directional antenna. This way, Rogers can get readings on individual animals while they wander. Radio tracking has enabled Rogers to plot the size of bears' ranges in his area (about ten miles across for males and three miles across for females) and has provided other insights into their behavior, such as where they find food at particular times of the year.

The batteries eventually have to be replaced. Thus, toward the end of each winter, Rogers sets off through the snow on a round of dens where his bears are still snugged in, nearing the end of their winter's sleep.

Formerly a field technician on bear studies, Adele Conover is working as a free-lance writer while she pursues a graduate degree in wildlife biology.

Rogers, with wife Donna, uses directional antenna and receiver to follow signals from radio collar.

Bears do not hibernate the same way other animals do. Hibernation has traditionally been defined as a state of winter dormancy during which an animal's metabolic reactions and physiological functions slow down drastically, and body temperature can fall to within a few degrees of freezing. In contrast, a sleeping bear's body temperature, usually 100 to 101 degrees F, falls as low as 88 degrees; its heart can slow to about eight beats per minute and the respiration rate is reduced dramatically.

Hibernating or not, a black bear sleeps in the winter, and this gives Rogers the opportunity to give each of his subjects a regular checkup. At each den he injects the resident bear with a drug that leaves it temporarily helpless, then lugs the animal and any cubs out into the snow. His routine involves adjusting the collars to allow for growth, changing the batteries, weighing the adults by means of a jury-rigged A-frame, taking samples of blood (and sometimes a tooth to establish age) and checking for parasites and injuries. Cubs get about the same treatment, plus their first collar at 14 months. Then the family is carefully tucked back in for another few weeks of rest.

This may seem like rough treatment to the casual observer, but Rogers is quick to say the bears usually suffer little more than inconvenience. "All of the things I've done to bears have been done to me," he maintains, "except wearing a collar 24 hours a day." Sometimes it is not that simple. "Every once in a while, once every couple of years, you'll give a shot and you'll mainline the bear [inject a lethal dose directly into its bloodstream]. You really hate for that to happen." It has happened to him three times in the past 15 years. He adds: "Consider that 1,350 bears were shot by Minnesota hunters in 1981."

While bears sleep, interesting things are going on inside them, and these events have attracted medical researchers. Bear bile contains a substance called ursodeoxycholic acid, since found in other animals, which dissolves human gallstones. Hard and painful nuggets of cholesterol and other substances, gallstones sometimes block the human bile duct and impede digestion.

Says Dr. Martin C. Carey, a physician and biophysicist at Harvard Medical School, "Chinese physicians used bile as a treatment for jaundice as early as A.D. 649. It was later rediscovered by the Japanese, and as recently as a few years ago it sold for a very high price in Japanese stores."

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Here the Rogerses (she is a medical technologist) extract a blood sample as high school class looks on.

A cub just a few months old is weighed. Its weight can be a good indicator of a bear's survival prospects.

Another medical researcher at Harvard, Dr. Robert Wolfe, injected nonradioactive isotopes of nitrogen into two of Rogers' bears in an attempt to trace the animals' metabolic pathways. The primary question he was addressing was how a sleeping bear deals with its nitrogenous waste, which goes to the bladder and is reabsorbed and reused rather than excreted. By isotopic tracing Wolfe has learned much about how this is accomplished. It may someday be applicable in the treatment of people whose kidneys have failed.

Dr. Ulysses S. Seal, a biochemist at the Veterans Administration Medical Center and at the University of Minnesota, has been analyzing the blood samples that Rogers collects. Seal is trying to establish how seasonally declining food supplies, daylight hours and temperatures trigger the bears' winter sleep. He has also observed that the sleepers tolerate high levels of cholesterol without developing arteriosclerosis.

Sleeping bears burn about 4,000 calories a day, but they limit their fuel to body fat while preserving their protein reserves. This is of especial interest to Dr. Ralph Nelson, a clinical nutritionist at the University of Illinois at Urbana/Champaign and director of research at Carle Foundation Hospital. "In severe burn cases, rapid protein depletion is often the cause of death. If we could learn exactly how bears limit their fuel to fat, we might be able to apply this to burn patients," Nelson says. He also believes that bears' metabolism may have applications to kidney malfunctions, obesity and even long-term space flight.

Medical researchers aside, Rogers has worked with a changing cast of students, and often other company as well. One day near the end of the winter denning season, he was trailed by a class of high school students. The den they were to visit required a mile of cross-country skiing to a clearing in the balsams where Rogers, in a voice that seemed to wrap around the trees like woodsmoke, briefed his young audience on bears in general as well as the particular animal they were about to visit.

Fattening up for the winter sleep

"Bears breed in summer," he told them. "The female then fattens up so that she can sustain new life. Some bears prepare for hibernation with something I call the fall walkaround. Some may travel up to 125 miles outside their usual ranges, and then return, and much depends on their success in finding food, particularly for females.

"One, two or three cubs are born within the den in January, and mother and babies stay put until March or April. During this time, the sow nurses her young, and by the time they toddle out into the sunshine, the cubs weigh three to five pounds. It's not unusual to see

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Bear 359, otherwise known as Wilma, relaxes at den mouth with cubs. She was 14 when picture was taken.

a bear mother sitting up against a tree and suckling her cubs as if they were human babies.

"When the bears wake up in the spring, they usually reestablish the same territories year after year. Sometimes female bears trespass on one another's territory to steal food, and this can lead to chasing and some fierce battles. I've never seen an actual fight between neighboring matriarchs, but one fine June day I caught two females—an 11-year-old and a 14-year-old with cubs—and both had fresh puncture wounds and lacerations on their heads and necks. Although the 11-year-old's wounds were more extensive, it was the 14-year-old mother and her cubs that later withdrew from the disputed area."

The teen-age audience was all ears when Rogers got around to mating. He told them that during the breeding season males have access to females whose receptivity may last for only a couple of days. Rogers has observed that males and females tend to mate in the females' territory year after year. The ranges of the two largest males in his study, interestingly enough, did not overlap except at a garbage dump; the range of each mature male includes the territories of from seven to 15 females. During the mating season, the old males are absolutely ferocious toward younger males, preventing them from settling anywhere nearby. After mating, males tend to stay in neutral "buffer zones" between the females' territories. Whether their exclusion from female territory is voluntary or enforced remains the subject of speculation.

The al fresco lecture at an end, Rogers led his troop across another quarter mile of Christmas-card scenery to an anonymous mound of snow. The only sounds were the clicks of the students' cameras and the radio receiver's beep-beep-beeps.

Rogers flopped into the snow, began probing, and was soon sniffing at a small opening. Bear smell. He loaded a syringe, fitted it to the end of a long stick, then shined his flashlight into the den to see where to aim. He would prefer to hit a large muscle, the blood supply of which would soon carry the drug throughout the body.

He jabbed quickly, then sat back to wait for the drug to take effect. After 15 minutes, confident that the bear was sedated, he poked his flashlight into the opening again. It was violently slapped aside; Rogers saw a large open mouth and lolling tongue. He jumped backward, and so did the others. The students laughed nervously.

Usually, a den visit requires about an hour. This time, however, three hours dragged by, punctuated by cautious rechecks and new attempts at sedation. Meanwhile, to calm his audience, Rogers ran through his repertoire of bear stories. About the many flashlights he'd lost inside bear dens. About bear promiscuity: "By our standards, it's pretty sinful, but if the male

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stayed in the same territory with mom, he'd be competing for food, and that wouldn't help the little ones at all." About how most bears make a new den every year. About how females line their dens with soft grasses and sometimes with cedar bark. "I've watched cubs trying to help by bringing in grass, but mom would always rearrange the bedding to her liking."

Finally, Rogers determined the bear was safe to remove, and the crew wrestled her inert bulk through the small opening. And his students had another shock. This bear could not have bitten anyone; most of her lower jaw was gone, shot away during the fall hunting season. One of the cubs was missing, too.

While Rogers completed his chores, he consoled the students with tales of other bears that had been seriously maimed but had managed to survive. All in all, though, it had not been a very happy day for the budding biologists, who headed home quietly and with a new way of looking at wildlife.

The next day, Rogers led a snowmobile trip to another den, a pile of logs and brush nearly six feet high. He administered the drug successfully on the first try, and he and a research assistant wrestled the bear's dead weight out. But just as the necessary work was completed, the animal began to move around. Rogers leapt on her back to try and steer her back into the den, while two assistants attempted to block escape from the sides, but the animal easily shook free and took off at high speed. Rogers squinted after her as she disappeared. "Sometimes they come out of the drug too quickly," he said. He did not seem to be worried about her. "As a matter of fact, about one out of 15 doesn't bother to make a den at all, but beds down on the ground and has cubs, too, with the snow piled right on top of them."

The next visit required crossing the surface of a broad lake. It was slushy and Rogers approached with the snowmobile wide open and a shouted warning to make sure the equipment did not get wet. This den, in an abandoned beaver lodge, was inhabited by a seven-year-old mother with two yearlings, a 25-pound male and a 17-pound female. "Too light," he said after weighing the female, and he gave her only a slight chance of survival into adulthood.

He was particularly fond of the mother bear and had named her Donna, after his wife. When Donna's aunt was two years old a trespasser bear had usurped her territory, forcing the aunt to move in with Donna's mother. The family lived jammed together for a year until the intruder bear left; then the aunt returned home and Donna's mother was able to produce Donna and her brother.

"Nutrition and reproduction are linked," Rogers said. "If berry crops are reduced for a year because of drought or frost, females may not get enough to eat and thus may not reproduce. Food was not very abundant last summer, and you can see the effects in the underweight cubs."

Although he characterized the mother as being unusually sweet-natured, she was beginning to shake off the effects of the injection, so Rogers and his crew hastily packed her and the cubs back into the den. The sky had become an alarming thundercloud blue, and muttering from the den seemed to indicate that the mother might reappear, so the team piled aboard the snowmobile for another sweaty-palmed crossing of the lake's melting crust and a return to the research station.

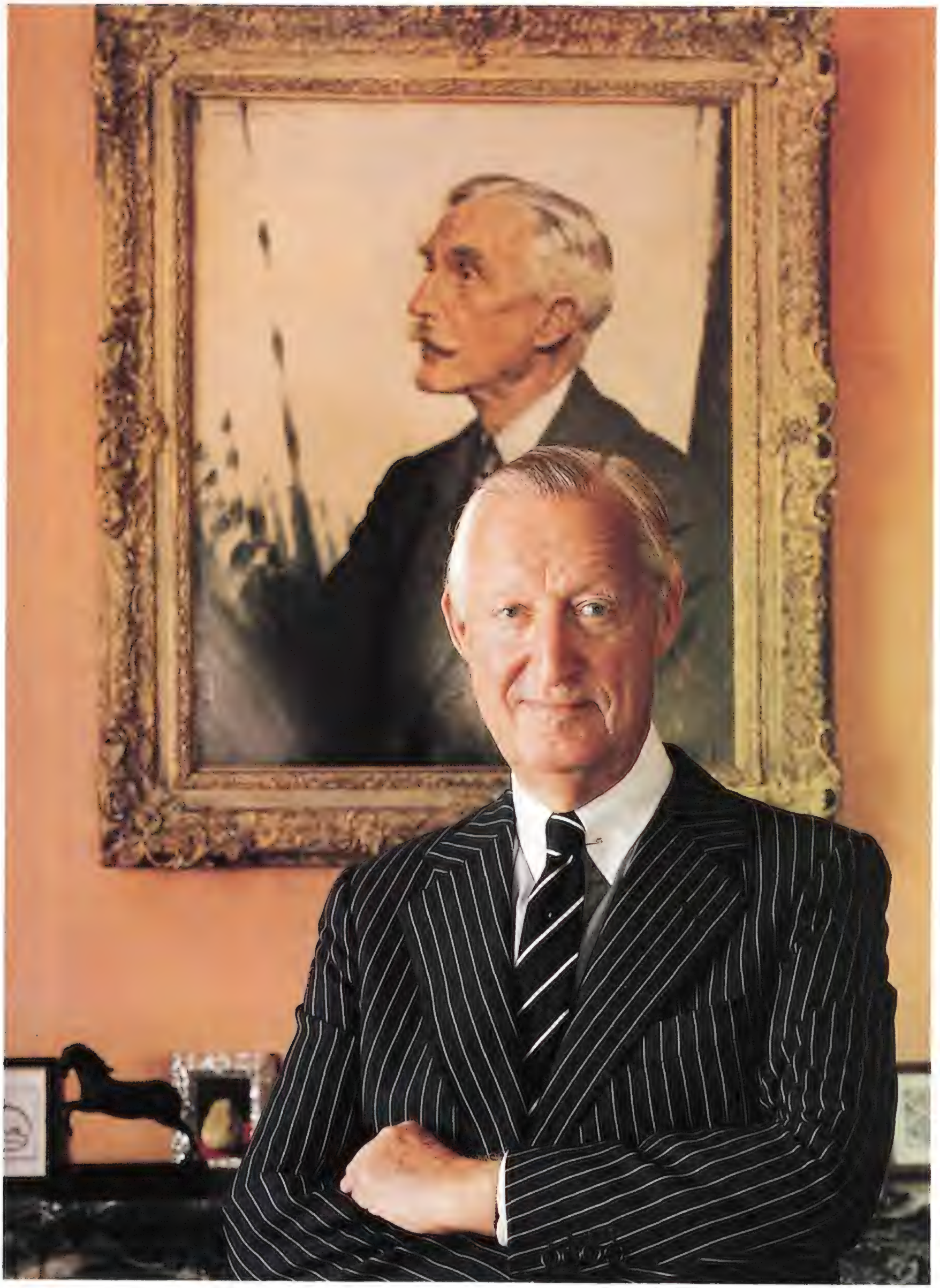
It is a scene that may not be repeated next year. This spring's bear run could well be Rogers' last; he will spend the next few years writing up the results of his project, and perhaps studying different animals. But Superior's bear man is not complaining about the change from dens to desk.

"It's really hard work," he admits, "to slog through some of those long distances . . . and I think I could be more scientifically valuable now by moving to another species.

"I've followed some of those bears since they were born. You get curious about where they'll go next, and how they're going to respond to different environmental things. But if I know that much about them," and here he pauses, ". . . well, I'm getting to the point of marginal returns."

Which is not to say he has lost interest. "You admire the bear for its strength; other people's studies have shown it's a very intelligent animal. I think the bear is the most exciting animal in the woods."

Only legs show as Rogers tries to pull sedated bear from den. Research aide Julie Hyde watches.



Paul Mellon stands before a portrait of his father,
Andrew W. Mellon, by Orpen, in his Washington home.

By John Canaday

A very private man and his supreme gifts to the public

Paul Mellon may cultivate anonymity, but his philanthropies in the world of art constitute a benefaction without equal

Mr. and Mrs. Paul Mellon enabled the National Gallery to purchase Cézanne's *The Artist's Father.*

Paul Mellon at the age of 75 has managed to maintain the lowest profile of any American with a comparable potential for high visibility. People close enough to him to observe the way he functions as bibliophile, hippophile, art collector and philanthropist—all on the grand scale—like to say that he has made his life a work of art. If that is true, he has achieved it against the force of pressures generated by one of the world's great fortunes, pressures that have had to be reconciled with the personal values he most treasures.

It is impossible, and for that matter would be pointless, to begin talking about this very rich man without talking about his money first. It is also impossible to meet him without confronting the money hurdle, which must be surmounted psychologically before the man behind it can be revealed—a hurdle, one gathers, that he himself has had to conquer. His problem as the possessor of a staggering inherited fortune has been to see that it does not possess him. He takes full advantage of all the good things money offers—there is nothing Spartan about his way of life—but as a man of conscience he has also put that fortune to work for the public good. For him this means making available through arts and letters an acquaintance with the humanistic tradition that, defined by the Renaissance, was still flourishing in the 18th century and managed to survive the Industrial Revolution of the 19th, but is threatened by the 20th's preoccupation with science and commerce.

To this end he and his sister, the late Ailsa Mellon Bruce, and the Andrew W. Mellon Foundation each provided one third of the $94.4 million that the new East Building of the National Gallery of Art in Washington cost. He had already created the less highly publicized Yale Center for British Art by his gift of $18 million for building and equipment as well as another reported $100 million, give or take a few million, as the estimated value of his collection of paintings, drawings, rare books, prints and documents—the largest and finest collection of British art in the world outside the Tate Gallery in London. Yale has also received some $40 million in cash and further large sums annually to cover operating deficits at the Center, these costs having been miscalculated in the original gift. To date, about $15 million has gone to the Bollingen Foundation, a publishing venture. Mellon is also helping, with a gift of $6 million, to build the new West

A quiet American and his gifts to the nation

Paul Mellon, 6, and sister, Ailsa, 12, as they were photographed in family home in Pittsburgh in 1913.

Wing of the Virginia Museum of Fine Arts in Richmond. He has promised as well to give the museum 59 paintings by French artists including Degas, Gauguin, Cézanne, Picasso and others of impressive stature, which are now on loan there.

In 1969, Paul established the Andrew W. Mellon Foundation, a philanthropic trust named for his father, by combining Ailsa's Avalon Foundation and his own Old Dominion Fund, with assets recently calculated to be $1 billion.

His latest gift to the National Gallery, accepted by President Reagan on behalf of the nation last January, was 93 works of art beyond price. These included world masterpieces of French Impressionist and Post-Impressionist art, 18th-century English paintings, 24 sculptures and the second largest collection of paintings, drawings and prints by the American artist George Bellows. The gift included six Monets, two Gauguins, two Cassatts, a Renoir, a van Gogh and a rare Seurat.

Shortly before that he had provided a $5-million nest egg to attract further contributions to a Gallery purchase fund. And, in the period just before *that* he had given $4.5 million to help remodel the West Building's ground-floor galleries.

Paul Mellon's philanthropies are virtually without comparison. Yet it was a scant six years ago that the publicity surrounding the opening of the National Gallery's new East Building made his name familiar to a public for whom "Mellon" until then had meant Andrew W. Mellon, Secretary of the Treasury from 1921 to 1932, who died 45 years ago. The Mellon family's gifts to the nation, beginning with Andrew's funds for the construction of the National Gallery, are thought to be the largest from any one source. Paul's gifts alone place him high among the largest single donors. But if his name is now familiar, his face is not. And this is exactly the way he wants it. Paul and his second wife, Rachel, usually called Bunny, and their family (two children apiece from first marriages) avoid sensational publicity.

Sartorially his style ranges from conservatively jaunty to securely laid-back, with a strong English accent in both cases. The accent, however, stops there. In spite of his mother's having been English, and England having been his second home since childhood, his speech remains unmistakably American, with no recognizable regional quality except for an occasional hint of Virginia, where, on an estate that includes his racing stables (as well as an airstrip for a private jet, and to which he refers as "the farm") he feels more at home than in his other residences in Washington, D.C., New York City, London, Cape Cod and Antigua.

If the circumstances of his birth had been different, he might indeed have been a professor of English literature in the tradition of Chauncey Brewster Tinker, Yale's own Mr. Chips, who inspired multiple

Critic John Canaday wrote about El Greco in the July 1982 issue and Neapolitan art in December 1981.

generations of undergraduates, including Paul Mellon, Class of '29, by exemplifying the academic life as an idyll, while sending any number of young scholars out into the provinces to cope with its realities. As a philanthropist and more considerable scholar than you can get him to admit, Paul Mellon has come by some of the satisfactions of a professor's life without running into its attendant liabilities.

Whatever his struggles have been in staying the course, he realized early that there had to be ways to circumvent the hazards of having been born excessively wealthy if one is not ready to settle for getting even wealthier as the goal of life. With no interest in the manipulation of money, and seeing no reason to expend his energies on increasing a fortune that was already more than ample to support the avocations that were becoming his central interests, he extricated himself from operational entanglements with the Mellon empire by a ruse as original but as indisputably legitimate—even laudable—as any ever employed in changing from one job to another: at the age of 34, six months before Pearl Harbor, he resigned from the boards of the Mellon National Bank and family corporations to enlist in the U.S. Army as a buck private.

An early predilection for arts and letters

This was four years after the death of his father, for whose sake he had joined the boards in the first place. The elder Mellon was one of the eight children of Thomas Mellon, who emigrated from a farm in Ireland and became a successful lawyer and banker in Pittsburgh, where Andrew, a financial genius, built the family fortune. A man for whom everything else in life ran a poor second to business, Andrew had viewed with apprehension his son's predilection for arts and letters at Yale, where Paul wrote poetry for the *Yale Literary Magazine*, and then at Cambridge, where he began to occupy himself seriously with adventures in bibliophilia and art collecting. "You don't want to be like Childs Frick," Andrew warned Paul, referring to the scion of another of the mighty generation of American fortune makers, who at the moment was indulging a temporary youthful aberration as an amateur taxidermist. Although Paul was unable to equate sonnets with stuffed animals, he yielded to his father's wishes and stuck with an unsympathetic career in finance until World War II gave him an out.

He smiles when it is suggested that patriotism led him, a man nearing the age of draft exemption, to offer himself to the Army. "Not at all," he says. "I knew we were bound to get into the war before long, and at that time you could choose your own branch of the service if you enlisted. I had the romantic idea that the horse cavalry would still be functioning in the war, and this was the way to get into it and off all those boards."

After Pearl Harbor, when the Army had to face the facts of modern warfare, it turned its horses in for tanks. But, upon his enlistment, after a period of basic training, Private Mellon, an expert horseman then as now, was promoted to lieutenant and put to giving riding lessons to other romantic spirits. This was not what he had bargained for, and he applied for duty overseas. In England he was reclassified as a farmer and put to advising Londoners on how to turn their patches of lawn into victory gardens. Finally, with a little help from a friend—General George S. Patton—he was transferred to the OSS in Europe and finished the war as a major with four bronze stars.

His career as a creative philanthropist (as opposed to a contributor to other people's good causes) germinated as the happy result of a desperate circumstance, a severe respiratory allergy suffered by his first wife, Mary, that was unrelieved by medical treatment. Convinced that it must be psychosomatic,

Secretary of the Treasury Andrew W. Mellon came to Cambridge University in 1931 for Paul's graduation.

Paul Mellon Collection, Upperville, Virginia

Mellon's first Stubbs painting, *Pumpkin with a Stable-Lad, 1774*, here in detail, remains his favorite.

Expert horseman, Paul Mellon takes a jump in 1941, riding with the Piedmont Hunt, Virginia's oldest.

Mary entered analysis under the Swiss psychiatrist C. G. Jung. Partly as a companionable gesture and partly from curiosity, no doubt, but also because, as he says, "I thought I could use a little help myself," Paul joined her. Analysis was unsuccessful in both cases. Paul emerged "as confused as ever" and Mary's allergy worsened to such an extent that she died during an acute attack in 1946. Nevertheless, their experience with analysis inspired the Bollingen Foundation. "We have all this money," Mary had cried to Jung, "and don't know what to do with it." In this instance Jung was able to help, and the foundation was formed in 1942 with the publication of Jung's works as its inspiration, and named after the town where Jung built his retreat. Since then, the Foundation has supported scholarly and eclectic publishing ventures specializing in original works, translations of works otherwise unavailable in English, and new editions of classics. Princeton University Press has now taken over the Foundation's publishing commitments.

Art collecting also caught Paul Mellon unawares, manifesting itself in the form of a horse named Pumpkin as painted by George Stubbs in 1774. At Yale, Paul had taken a popular undergraduate course in art history—E. C. Taylor's famous "Pictorial Art"—but even so, his father's Old Masters, which later became the nucleus of the National Gallery's collection, had never meant much to him ("They were just pictures"). But at Cambridge, where he spent as much time riding and rowing as he did reading history, he began acquiring prints and paintings corollary to those sports. Stubbs' *Pumpkin with a Stable-Lad, 1774*, now recognized as a major English masterpiece, was thought of at that time as only a "horse picture." Stubbs' recent elevation to the peerage of English painters will be officially recognized in a Stubbs show scheduled for 1985 at the Tate Gallery and at the Yale Center, with *Pumpkin* (above) and other Mellon Stubbses prominent in the selection.

Stubbs' distinguishing quality is an essentially classical discipline in the refinement of acutely realistic detail, but this is not the kind of esthetic evaluation that would occur to Paul Mellon, or that he would confess to if it occurred to him. He never acquires a painting, he says, because of its historical importance, its pedigree, its rarity, or the eminence of the painter. He buys what he responds to. It is as simple as that. Ordinarily, abstract art does not interest him, but when asked about an exception—a Ben Nicholson on the wall of the study in his Washington house—he said that he had gone to an auction to bid on a Stubbs but hadn't liked it. Responding to the Nicholson, he walked out with it instead.

Nicholson's abstractions, like Stubbs' pictures, are marked by a high degree of calculated order without loss of inherent energy that relates them to the same qualities in the Mellon collection in general. His favorite among the French Impressionists is Degas, whose patrician stance never blinded him to a sympathetic perception of the complexities of the human spirit. In the Washington house a cluster of Degas drawings decorates a wall in much the manner that family photographs are displayed in most houses. A famous Cézanne, a Douanier Rousseau still life, a van Gogh (in an exceptionally happy mood), a Pissarro, a Berthe Morisot among others, hang as unpretentious adjuncts to the life lived there.

The reserve that characterizes Paul Mellon the collector and Paul Mellon the philanthropist tends to give way when the talk gets around to his horses, and the anonymity so assiduously cultivated in other fields does not hold for the owner of Rokeby Stables ("the farm") in the coterie of hippophiles who breed and race fine horses. Horses are "rather stupid animals,"

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he says, which does not keep them from being fascinating in their temperamental variety. In the debate as to whether race horses know they are winning and enjoy it, he takes the negative: they don't. They run because they have been trained to respond to the whip. In one delightful exception to this rule, his biggest winner, Mill Reef, won its most spectacular victory as a two-year-old in the Gimcrack Stakes of 1970 when the jockey, afraid of straining the horse on dangerously soft ground, asked permission to use no whip at all, and received it. That day, choosing its own pace, Mill Reef left the others behind and seemed to be having a wonderful time coming in first by ten lengths.

If his interest in horses contributed to his interest in collecting, there has also been a little spill from horse racing back into literature. The Gimcrack is named for a renowned horse foaled in 1760 (by Cripple out of Miss Elliott) who, incidentally, was painted five different times by Stubbs. As owner of the 1970 winner, Paul Mellon addressed the York Gimcrack Club at its 200th annual dinner. It was a short talk ("too long," he insists) punctuated by literary allusions, a neatly inserted lesson in the appreciation of Stubbs' art, and two verses of his own making—one of them a defense of British racing (under attack at the time) in the paradoxical form of a nursery jingle, and the other a tribute to Gimcrack himself, "the sweetest little horse that ever was," according to one owner, and a multiple winner as well. Poet Mellon's tribute was an acrostic in the form of a sonnet in which Gimcrack reflects upon his Earthly life from some equine Valhalla, with the first letters of the lines of the octet spelling out "Gimcrack" and those of the sestet, "spirit."

With his assets, his gentlemanly aplomb, his education and his family tradition, Paul Mellon could have been a career diplomat and, in all likelihood, ambassador to any country he chose, including England, as his father was in 1932-33. Asked about whether he has any regrets on that score, he seems uncertain for a moment, saying only that his possible readiness for such a post and the right diplomatic moment never coincided. But there does not seem really to be much of a question there. A career in public office similar to, say, Nelson Rockefeller's? Not likely. The low profile has worked very well, and London is a long way from the farm.

At National Gallery's renovated galleries, Mellon studies Degas dancer on loan by him and wife, Bunny.

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By Constance Bond

The ancestors—and lost cousins—of the space suit

The long road from the first $75 model to today's $2-million outfit has been a bit bumpy

Now that flights of the space shuttle are almost routine, we hardly raise an eyebrow at the image of a space-walking astronaut garbed in plastic-bubble helmet and nine-layered pressure-molded suit—the most complex garment ever made. Even some problems with the suits' life-support systems (which prevented the scheduled space walk last November) seem like minor hitches, to be quickly corrected by teams of computer-equipped engineers. But in a sense the high-tech sophistication of the modern space suit is only skin deep. Just beneath it lies a 50-year history of wild ideas, improbable prototypes, courageous tests and brilliant insights that made the modern suit possible. And sometimes this history reads like a comedy of errors.

One of the first fictional astronauts to visit the moon, in Jules Verne's 1872 fantasy, *Around the Moon*, regretted his lack of a space suit. If he'd had one, he lamented, he "could have ventured out and assumed fanciful attitudes of feigned monsters" on top of the space ship. The real aviators who tried out the earliest "pressure suits" (forerunners of today's space suits) had experiences only slightly less bizarre than he had imagined.

When inflated, early German pressure suit expanded so much that viewing windows were aligned with the forehead.

Wiley Post was the first. In the early 1930s, flamboyant fliers from the United States, Great Britain, Italy, France and other countries were competing fiercely in the great air races being staged all over the globe. Post wanted to win the London-to-Melbourne race coming up in October 1934. Since 1931, when he had flown around the world in a record-breaking eight-and-a-half days, he had realized that the higher his plane flew, the faster it went. But he knew that if he was going to fly in the stratosphere he needed protection—an environmental envelope to provide oxygen to his entire body at constant pressure. In June 1934, B. F. Goodrich made him a pressurized suit, using rubberized parachute fabric and an aluminum helmet. It cost about $75. But when Post took it out to Wright Field in Ohio to be tested in a low-pressure chamber, it sprang a leak, then blew open at the waist. That was the end of Suit Number One.

With only four months to go before the race, Goodrich engineer Russell Colley hurriedly got to work on a second suit, re-using the helmet from the first. It was ready by late July. When Wiley came by the Akron plant to look over the suit, no one noticed that he'd put on a little weight recently.

The joke was on Wiley

The test came on a particularly hot, humid day. Already perspiring heavily, Post climbed into the suit—and got stuck. "We got him into it," Colley recalls, "and then we couldn't get him out. I led him over to a refrigerated room and we got him cooled off. But we still couldn't get him out, so we had to cut the suit off him. Wiley thought it was a great joke, though; he was laughing the whole time."

Suits Number One and Two were now totally destroyed (except for the helmet, which is in the collection of the National Air and Space Museum). But like many suits that would never fly, they gave Colley information he needed to develop the next one. Made

Germans tried "tin woodsman" style after abandoning soft suits in the early 1940s.

In 1934, Wiley Post modeled his third pressure suit, the first ever to fly.

Crank (A) and spring-mounted gloves (B) puzzled analysts of a 1935 French suit.

Italian all-metal suit, from the late 1930s, had a huge hole in the back for entry.

Hypothetical "moon suit" appeared soon after John Glenn orbited the Earth.

Lunar astronaut could garden, then curl up to rest inside a 1960 prototype.

Pressure cell was designed to protect disabled crewman in pressurized cabin.

with a single layer of fabric, both early suits had grown voluminous and restrictive when inflated, like tailored balloons. For Number Three, Colley decided to use two separate layers—an inner rubber bag to contain the gas under pressure, and an outer fabric shell to control the inner bag's shape. He put it together at home in the evenings on his wife's sewing machine, while Wiley stood by to be measured—passing the time by teaching Colley's 11-year-old daughter how to shoot craps (he ended up owing her $60,000).

The first suit to fly

The new suit (opposite) was not very mobile, and it was somewhat weird looking, but it worked. After successfully testing it in Wright Field's altitude chamber in late August, Post took it up for a spin in his plane, the *Winnie Mae*. Number Three thus became the first full-pressure suit in history to actually fly, though in this case, as in so many others, clothes didn't make the man: the *Winnie Mae* developed engine trouble, and Wiley had to drop out of the race.

Before long, teams in Great Britain (where, unknown to Post and Colley, a pressure suit had recently been successfully tested in a pressure chamber), France, Germany, Italy, the USSR and elsewhere were at work developing pressure suits, all independently and with varying degrees of secrecy. Seeing military applications, governments started to jump in too. Some tried hard suits made of metal. Others tried soft, inflatable ones. Almost any enterprise with experience in garbing people in protective or supportive wear could make some claim to expertise, and eventually manufacturers of such diverse products as armor, diving suits, corsets and girdles, and galoshes joined in the search for the perfect suit. Some of the strangest-looking ever made were the results of early efforts in Germany, France and Italy.

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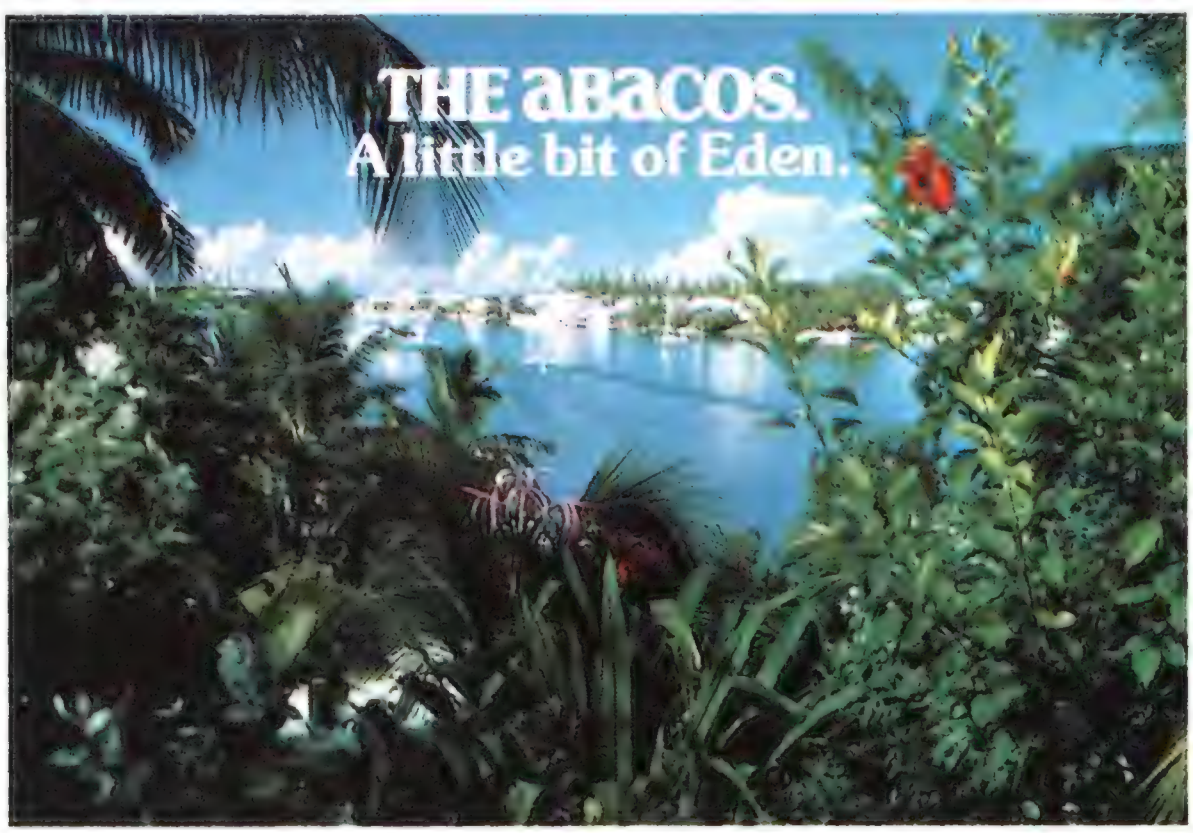
Dogs were suited up by the Air Force for high-altitude studies in the late 1950s.

The German suit looked like a mole-headed monster. Asked in 1935 by the German Air Ministry to develop a pressure suit, the Draegerwerke (a diving-suit maker) used the finest of materials. Over a form-fitted garment of silk cloth, technicians put a net of silk cord to keep the garment from losing its shape under pressure (p. 107). The suit looked fine until it was inflated, when it expanded so much that the "eye holes" moved several inches above the pilot's eyes. He couldn't see out and he could hardly move. By the early '40s, Draegerwerke was trying a new approach: a suit made entirely of metal except for rubber joints (p. 108). It never flew either.

Even more unlikely was a late 1930s Italian entry, which looks like a diving suit reinterpreted by an aging Italian Futurist sculptor (pp. 108-09). It was designed so that the pilot could climb into the suit through a large hole in the back, presumably then to be carried by a half-dozen bearers into the airplane.

A hand crank jutted from the chest of the 1935 French Rosenstiel suit, giving it the appearance of a wind-up toy (p. 108). Back home, analysts in U.S. Naval Intelligence pondered the meaning of the crank, as well as the odd, spring-loaded mechanisms on each wrist. Within months of its unveiling they learned through a "reliable source" that the purpose of the crank was so the pilot could control his own air pressure. And the purpose



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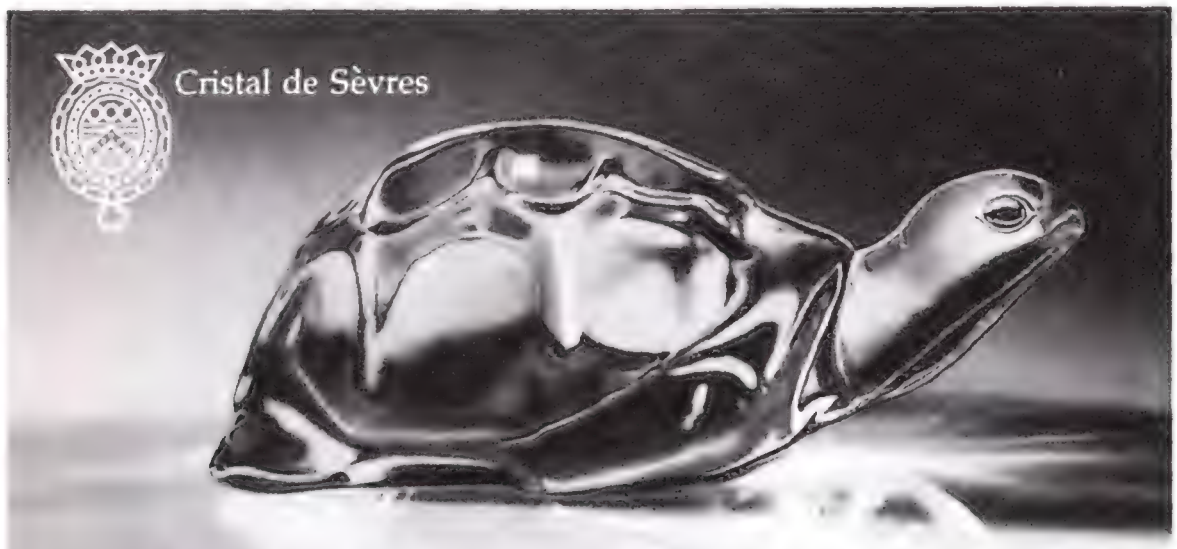

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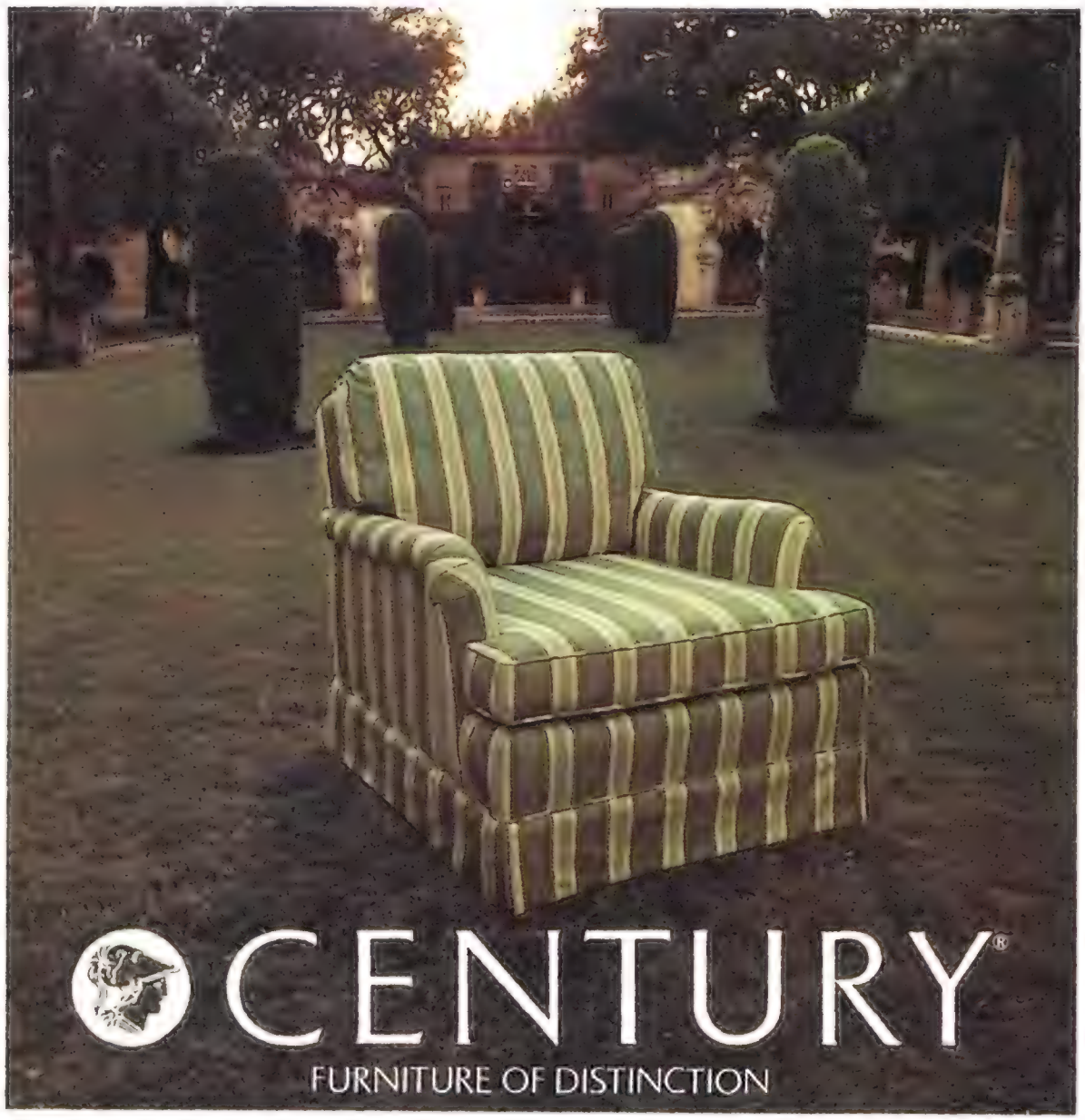
Space-suited woman in 1889 French fantasy needed many trunks to travel.

of the spring-loaded mechanisms was —what else?—so the pilot could turn the crank (the springs applied pressure to the backs of the hands, pushing them into fists when the suit was inflated). But a lot of the suit was "highly secret," said the source, leaving the analysts to wonder how well it all worked (not very).

After 1939, pressure-suit designs became more predictable; the U.S. Government officially entered the picture, issuing development contracts to numerous companies. "They held big competitions," says Russell Colley, "and it sort of became design by committee. There were fewer surprises." During the following decades, flight technology developed rapidly, from planes to jets to spacecraft. From the early 1940s on, when it became possible to pressurize airplane cabins, the pressure suit became a secondary, back-up system. Then with the first space walk in 1965, followed by men walking on the moon in 1969, the pressure suit became the primary protection system—a true space suit. Yet even in this era of design by com-



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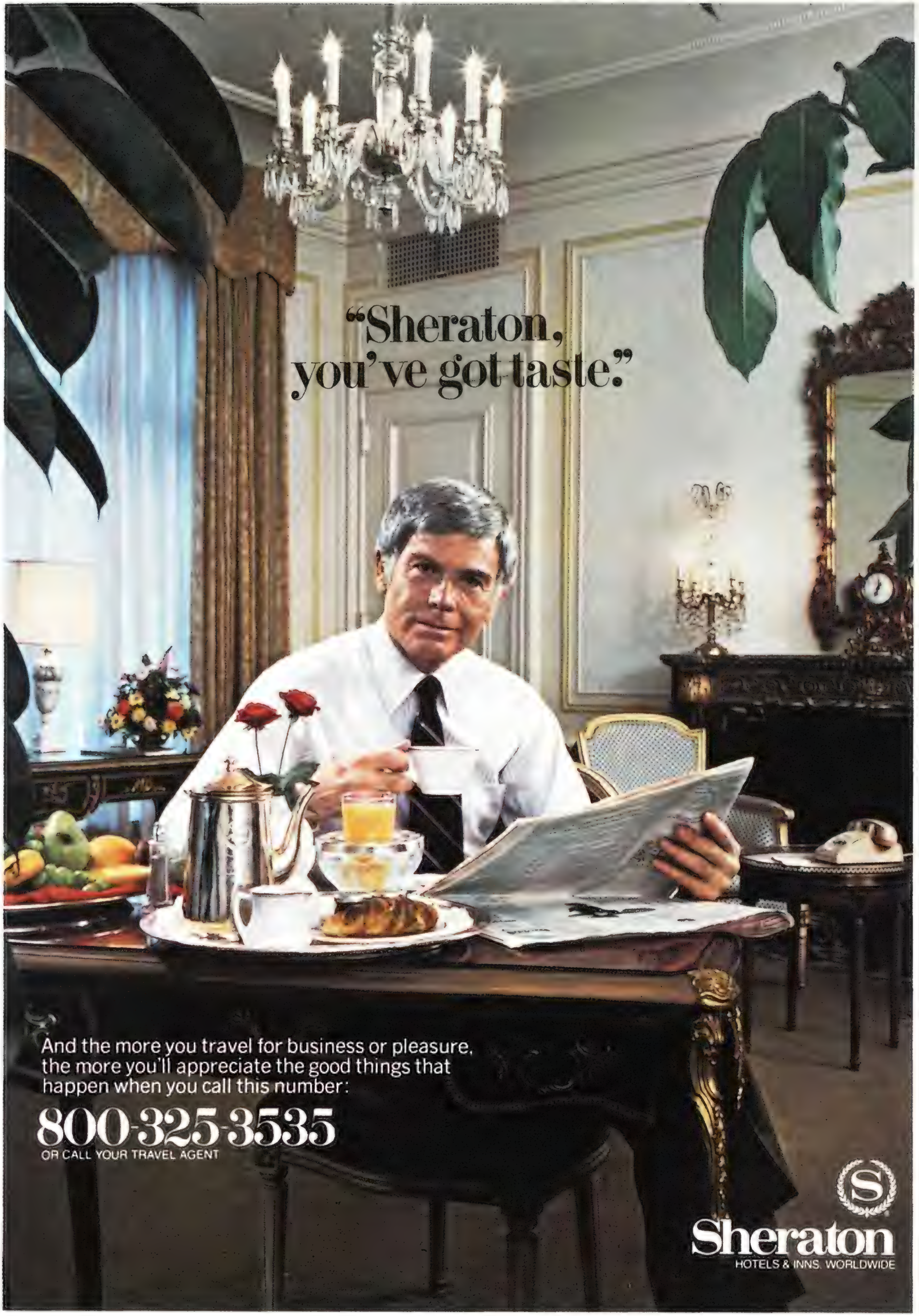
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mittee, some unusual suits cropped up along the way.

For instance, there were the "pressure cells." They were for long flights such as bombing missions. If a crew member became ill because of breathing difficulties, he could be put in this bag, zipped up and pressurized while the rest of the crew went on with the flight. B. F. Goodrich's pressure cell looked like a giant sweet potato. Berger Brothers, owners of the Spencer Corset Company, got fancier—theirs had a single arm that terminated in a mittlike hand (p. 109).

Animals made a big contribution to research, but seeing them suited up was jarring. Everyone remembers the space chimps, but even St. Bernards and other dogs had their own personal survival suits (p. 110). In the mid-1950s, they helped in tests of survival clothing for pilots whose cabins had depressurized.

Now that men, chimps and dogs have been to space, the next shuttle flight will have its first woman. Although Sally Ride has not been scheduled for a space walk, eventually women as well as men will don the $2-million suits, leave the shuttle through the cargo bay and carry out their space chores, perhaps to replace a communications satellite's batteries or deploy a space telescope.

In 1889, a French illustrator drew a future space woman (p. 112). He got the helmet down fairly well, but could not imagine her wearing anything other than a full-length dress—with a bustle. A century later, bustles were not considered for the first woman's space suit. But female and male astronauts alike must sense relief as they muse upon some of the garb they might have ended up wearing for their space debuts. Think, for example, how Neil Armstrong would have felt taking his giant step for mankind wearing one of those "other" suits (p. 109)—the one with retractable tripod legs and interior bins stocked with food. Try to swing a golf club on the moon wearing that!

Astronaut Anna Fisher eases into shuttle suit—the product of 50 years of tenacity.

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By Lionel Casson

'It would be very nice if you sent me 200 drachmas'

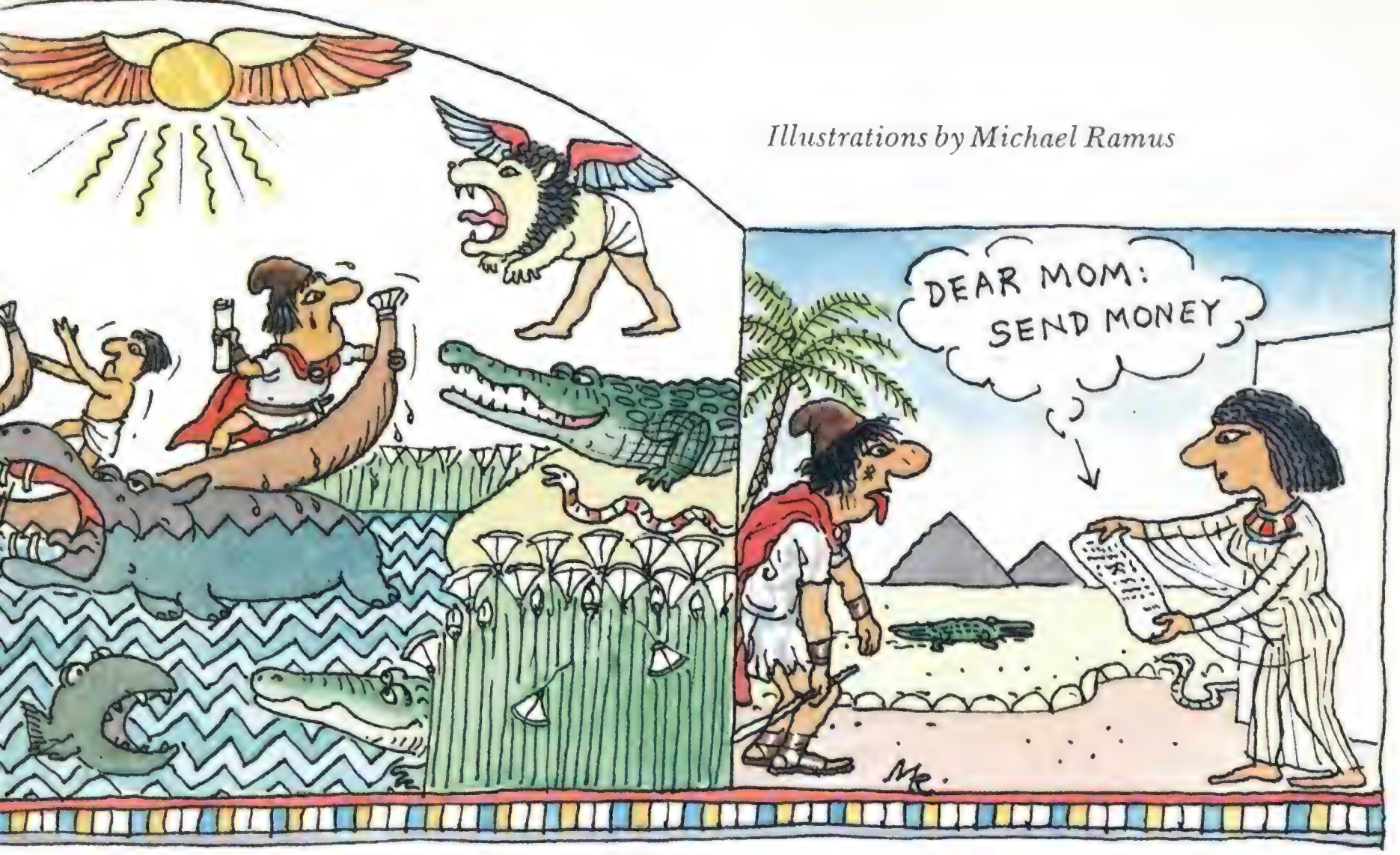
Family letters discovered in ancient Egypt show that writing back home to Papa on papyrus was much the same then as now

"You did a fine thing! You didn't take me with you to the city! If you don't want to take me to Alexandria, I won't write you a letter, I won't talk to you. . . . What's more, if you go to Alexandria, I won't shake your hand or say Hello to you ever again. So, if you don't want to take me with you, that's what will happen. Mother said to Archelaus [perhaps an uncle or brother, possibly a servant], 'Take him away! He upsets me!' You did a fine thing: you sent me presents! Big presents! Chicken feed! They pulled a trick on the twelfth, when you sailed. Send for me, please! If you don't send, I won't eat, I won't drink! That's what will happen."

This letter, in a child's clumsy hand and peppered with a child's mistakes in grammar and spelling, was sent sometime in the third century A.D. by Theon jr. from his hometown up the Nile to Theon sr. at Alexandria. Senior had apparently gone down there, probably on business, and Junior was in such a rage about it that his own mother couldn't stand being in the same room with him. Even bribing the whiny lad with gifts didn't help.

A multitude of letters from the past have been collected and published, mostly the letters of luminaries, preserved because of their fame or eloquence: Abelard's exchanges with Heloise, Lord Chesterfield's advice to his son, the voluminous correspondence of Lord Byron, Gustave Flaubert, Virginia Woolf. But there are few collections of letters written by the likes of Theon jr., the Toms, Dicks and Harrys of the past, letters of the kind we ourselves are constantly sending which inevitably end up in the wastepaper basket and from there vanish into oblivion. That fate befell such letters in the ancient world as well—with one important exception. In Egypt, where Theon lived, they did not vanish. There, in many areas, rain is so scarce that even the most fragile substance, spared the ravages of

Illustrations by Michael Ramus



There was no post, so letter writers had to find a hardy, reliable messenger bound in the right direction.

dampness and protected from wind and sun under a blanket of dry sand, can last forever.

When archaeologists dig into the soil of Italy or Greece or any other region of the ancient world, they resurrect pottery, metals, masonry; when they dig into the sands of Egypt they resurrect not only hard materials but the normally perishable contents of dump heaps—wood, baskets, cloth and discarded papers. The latter include hundreds and hundreds of private letters like Theon's. While many have been translated and published in scholarly literature, the language in them was simple, everyday Greek, never highfalutin, often colloquial and rarely perfect; there are plenty of mistakes in spelling and grammar.

By and large, the correspondents belonged to a special stratum of society. Egypt was one of the many lands that Alexander the Great conquered. After his death, one of his generals, Ptolemy I, took the place over. For the next three centuries, from shortly before 300 B.C., he and his successors ruled. They did not trust the native Egyptians, so, to get soldiers for their armies, technicians to run public projects, bureaucrats to staff the royal administration, they enticed swarms of Greeks to leave their homeland and settle along the Nile. When, in 30 B.C., Cleopatra, the last of the Ptolemies, put an asp to her bosom and Augustus made the country part of the Roman Empire, Romans began to move in as well. Altogether these people formed a literate, powerful, well-to-do middle class whose members were to be found in towns and villages up and down the great river. And it is their correspondence, mostly in Greek but occasionally in Latin, that has come out of the trash perfectly preserved because of Egypt's arid climate.

They wrote on paper made of strips sliced from the stalks of the papyrus reeds that once grew in profusion along the Nile—the bulrushes from which Moses' cradle was fashioned. The paper is thicker and heavier than what we use today, but it is of good quality, not a bit inferior. Pens were pointed reeds and the ink a mix of lampblack, gum and water. Both paper and ink were tough: excavators have exhumed many a papyrus document just as legible as it was on the day when it was inscribed.

If writing a letter in those times was not much different from now (at least up until the invention of fountain pens and similar gadgets), actually sending it was as different as can be. There was no public post for private epistles; that lay more than a thousand years in the future. A writer had to track down a

This is Lionel Casson's third article for SMITHSONIAN*; he is a professor of classics at New York University, and is writing a maritime history of Greece and Rome.*

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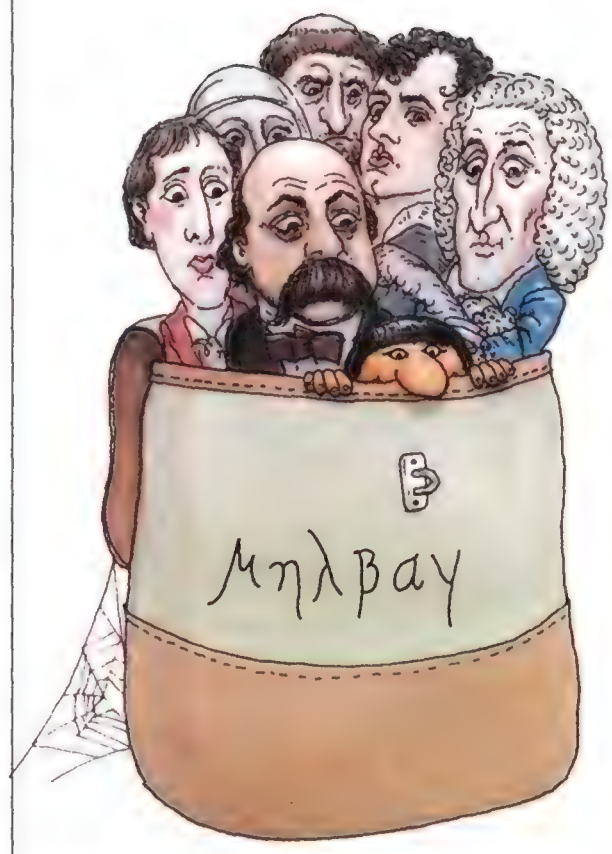

Mailbagful of correspondents, clockwise from mustachioed Flaubert: V. Woolf, Heloise, Abelard, the Lords Byron and Chesterfield, and (now) Theon jr.

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traveler who happened to be headed toward the desired destination. "Finding somebody going your way from Cyrene [on the coast of what is today Libya], I felt I had to let you know I was safe and sound," runs a letter from a young Greek who had left Egypt for Rome sometime in the second century A.D.

"I was delighted to get your letter," begins another, "which was given to me by the sword-maker; the one you say you sent with Platon's son, I haven't got yet."

"I sent you two other letters," runs a third, "one by Nedymos and one by Kronios, the armed guard. I've received the one that you sent with the Arab."

Then there was the matter of the address. House numbers lay as far in the future as a postal service and, to make matters worse, only the main streets bore names. So, after correspondents had found someone going in the right direction, they had to give him careful instructions about delivery. Anyone who has tried to find his way to a remote suburban dinner

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party, following directions given on the phone by a rattled hostess, will sympathize. One ancient Egyptian letter carrier, for example, had to cope with the following:

"From Moon Gate [i.e., the particular gate of several in the town's defense wall that he was to enter by], walk as if toward the granaries . . . and at the first street back of the baths turn left. . . . Then go west. Then go down the steps and up the other steps and turn right. After the temple precinct there is a seven-story house with a basket-weaving establishment. Inquire there or from the concierge. . . . Then give a shout."

Apart from the address, and an impromptu mailman, the missives people wrote to each other in that world so remote in place and time could have been written today.

To begin with, these well-to-do Graeco-Egyptians did a good deal of traveling, including trips abroad, and, just as we do, they often wrote back to report a safe arrival. "Having reached Italian soil," runs a letter sent from Naples or Rome, "I felt it essential to let you know that I and all with me are fine. We had a slow voyage but not an unpleasant one." All too frequently the journey was extended by traditional travelers' ordeals. A distracted daughter writes to her mother:

"I want you to know that on Tybi 13 [January 8] I went to Tyrannis but I found no way I could get to you,

For many centuries, in many languages, letters home have asked the old questions.

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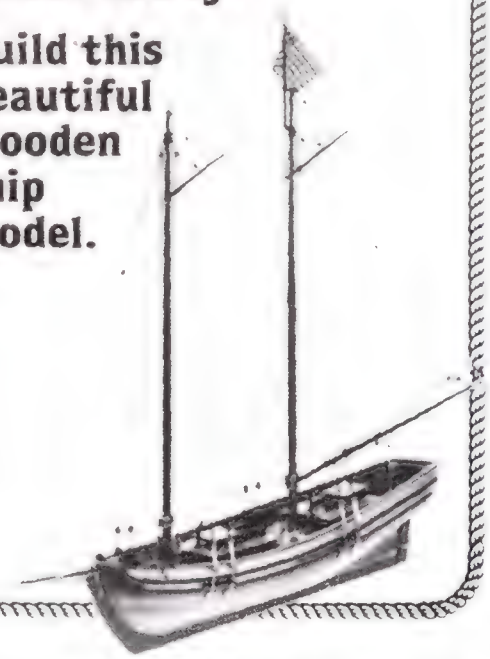

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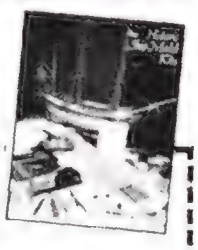

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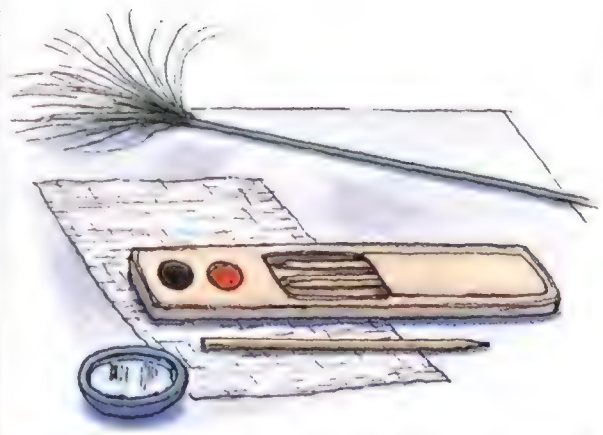

Writer's kit: papyrus stalk, paper, palette, red and black ink, reed pens, water.

since the camel-drivers didn't want to go to Oxyrhynchus. Not only that, I also went up to Antinoe to take a boat, but didn't find any. So now I've thought it best to forward the baggage to Antinoe and wait there till I can find a boat and can sail. Please give the bearers of this letter 2 talents and 300 drachmas . . . to pay for transportation. . . . If you know you don't have it at hand, borrow it . . . and pay them, since they can't wait around even an hour."

The situation is still familiar, especially to parents of college-age children: no connections available and funds running short. Only the physical elements have changed. Today it is drivers of taxis, not camels, who refuse to take you where you want to go. And, when you run out of money, you telegraph or telephone and receive a check or money order, care of American Express, instead of having to depend upon impatient messengers to pick up a sack of coins. (Just trusting a stranger with raw cash could be a traumatic experience.)

As many still are today, Egyptian sons were sent away from home for their schooling, and they wrote back to tell how things were going. "Don't worry, Father," one reports, "I'm keen about my work." But, he can't help adding, "I also take time off." Another has problems:

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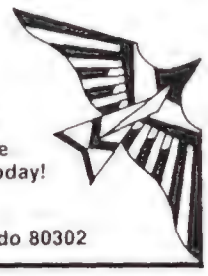

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once . . . and haven't come here. After assuring me, 'I'm coming,' you didn't come to find out whether my teacher was paying attention to me or not. And he asks about you practically every day: 'Isn't he coming yet?' And I just say, 'Yes.' Do your best to come to me quickly, so he'll teach me as he's eager to do."

Father was to arrive, it seems, not only to pay a visit but also the tuition. There was no free education in ancient times. In fact, there were no schools as we know them, no organizations with a faculty, building, classrooms and so forth, no teachers with certificates, degrees or other proofs of qualifications. Some scholarly-minded person who felt he was capable would set himself up as a schoolmaster, establishing himself in a private house and enrolling a handful of pupil-boarders. It was a one-man operation: he taught all the subjects to all the students, dealing solely with boys. Girls were educated at home by tutors who lived in—but hardly as members of the family, to judge from a letter written by one father to his household, in which he gives orders to pass on "to my daughter's teacher whatever I didn't eat, so he'll be keen on working with her." In other words, a bonus in the form of table scraps.

Boys left home for military service, too, but not for just a year or so as many European conscripts do today. They signed on for a full hitch, and in the Roman armed forces that meant 20 to 25 years for the army, 26 for the navy—in effect, a lifetime commitment. To many, the sacrifice was well worth it—a respected profession, fair enough pay and, for a native Egyptian, Roman citizenship on discharge (if he managed to last that long). Enlistment in the regular army, the legions, was limited to citizens, but the navy was open to all, and Egyptian lads flocked to join up, even though it might mean spending the next quarter-century pulling the oars of a war galley. Not to mention

Egyptologists still find perfectly preserved letters because the climate is so dry.

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separation from home and family, since they were assigned mostly to overseas bases, especially the main one at Misenum, just outside Naples.

"I want you to know, Mother," writes one recruit, "that I arrived safely at Rome on Pachon 25 [May 20], and that I was assigned to Misenum. I don't know my ship yet. . . . Please, Mother, take good care of yourself. And don't worry about me—I've come to a good place!"

By the time he writes to his father, another young navy recruit named Apion is pretty well settled in:

"First of all, I hope you are well and will always be well, and my sister and her daughter and my brother . . . When I arrived at Misenum I received from the government three gold pieces for traveling expenses. I am fine. Please write me, Father, first, to tell me you are well, second that my brother and sister are well, and third so that I can kiss your hand because you gave me a good education and because of it I hope to get quick promotion. . . . I have sent you by Euctemon a picture of myself."

Today sailors consigned to boot camp mostly have their traveling expenses handled with special passes; Apion got cash for his—three gold pieces. Our apprentice seamen mail photographs of themselves back to the family; Apion had his portrait painted, a miniature most likely, in his new Roman uniform.

Apion's letter is full of hope and enthusiasm, but one from another youngster who joined the army and was assigned to a unit at Alexandria has nothing but complaints. Roman servicemen had to provide their own uniforms and equipment; this was obviously much on the young chap's mind as he writes to his mother:

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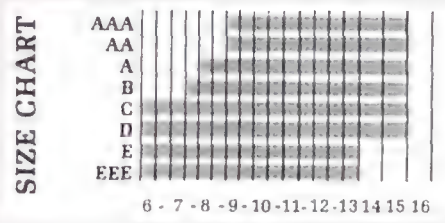

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left, but now not one, because I bought a mule carriage and spent all my change on it. I'm writing you this to let you know. Send me a heavy cape, a rain-cape with a hood, a pair of leggings, a pair of leather wraps, oil and the washbasin, as you promised . . . and a pair of pillows. For the rest, then, Mother, send me my monthly allowance right away. What you said when I came to you was, 'Before you reach your camp, I will send one of your brothers to you [presumably with money].' And you sent me nothing . . . you left me this way without a thing . . . you just left me this way, like a dog. And when my father came to me he didn't give me an obol, not a rain-cape, not anything. They all make fun of me: 'His father is a soldier, and he's given him nothing.' He said he'll send me everything when he gets home. But you two have sent me nothing! Why? Valerius' mother sent him a pair of belts, a jar of oil, a basket of meat, a double-size cloak and 200 drachmas. . . . So, please, Mother, send me, don't neglect me this way."

The mother might well have been dismayed on receiving such an outburst: if he was able to buy himself a mule carriage she must have sent her beloved off with plenty of money; in 300 B.C. that was the equivalent of buying a car today.

An impromptu mailman waits on Nile shore, hoping to hitch a ride south.

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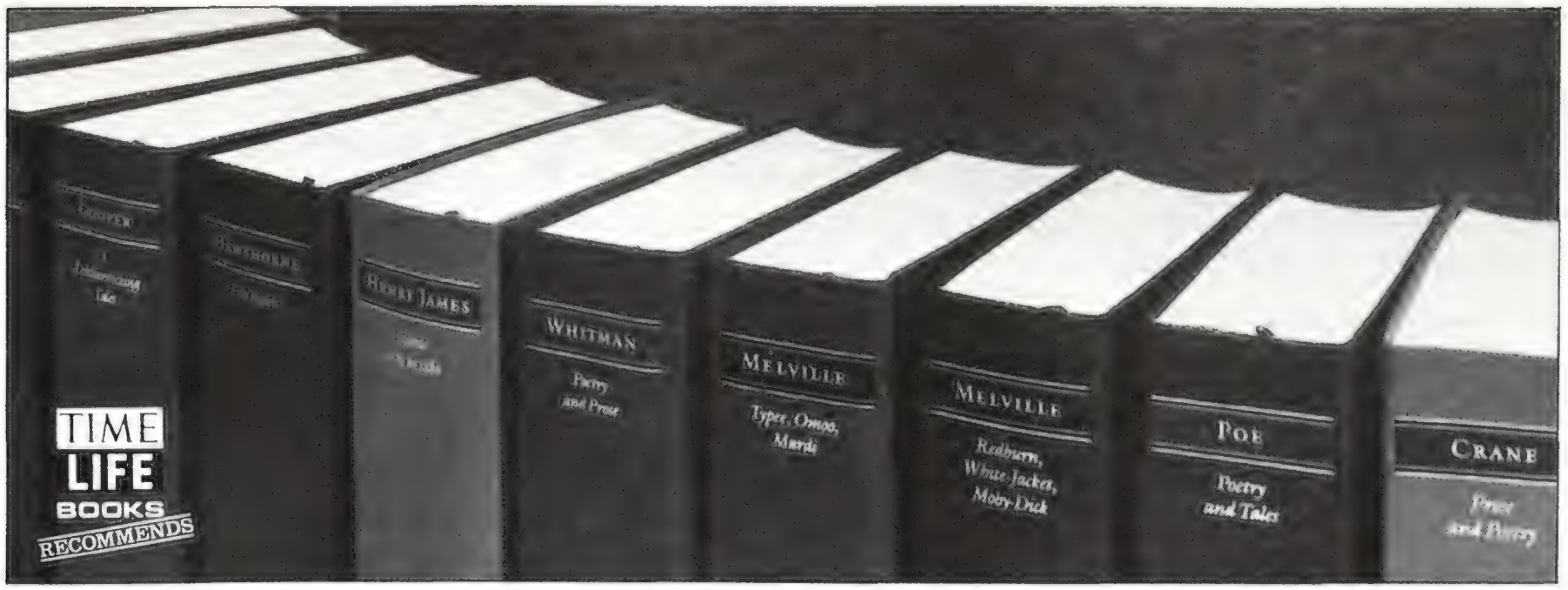
There were no house numbers so letter carriers frequently had to ask the way.

Parents had other problems with their spoiled scions. One harassed father had to deal with a son who, attached to the infantry at Alexandria, was agitating for transfer to the cavalry—not any unit but the squadron stationed where the family lived, at Coptos (now Qift) up the Nile. The father explains it all in a letter to his brother, the boy's uncle:

"I have written you before about my boy Pausanias taking service in a legion. However, since he no longer wanted to serve in a legion but in a squadron, on hearing about this I had to go and see him, even though I didn't want to. So, after much pleading on the part of his mother and sister . . . I went to Alexandria and used ways and means till he was transferred to the squadron at Coptos."

How familiar it sounds! The son expresses a wish; the adoring mother and sister, overjoyed at the prospect of having their dear boy nearby, badger the father to pull strings. This involved going to the capital and, in those days, Coptos to Alexandria was hardly the quick journey that it is now. It was 600 miles by boat each way, drifting downstream with the help of the current and sailing slowly



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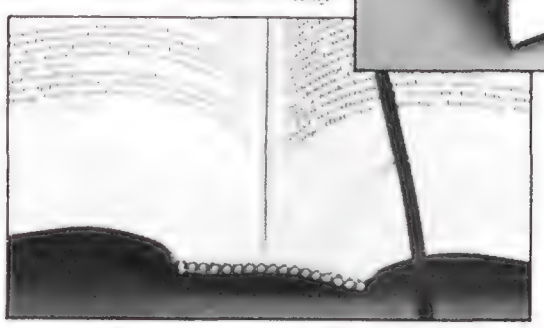

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back against it, a trip of better than two weeks even if the vessel traveled night and day. Small wonder Father "didn't want to."

If Pausanias could not wait to get out of the infantry, Terentianus, a sailor in the fleet at Alexandria, could not wait to get in. "God willing," he writes his father, "I hope . . . to be transferred to a cohort [a cavalry unit]; but here nothing gets done without money. Letters of recommendation are useless." This follows the customary list of clothing and equipment needed, including a pickax because "the adjutant took from me the one you sent." Unlike Pausanias, Terentianus expected no help from his father; the family obviously did not have the money to go around greasing palms. They may have had trouble even sending the boy the things he wanted. The trip from home to the naval base and back would have taken a week, probably more. Rich families with plenty of slaves as domestic help could always spare one for a long errand, but not Terentianus'. He had to be patient until his father ran across someone who happened to be going to Alexandria—someone who would be willing to carry a package and could be trusted with it.

We have lingered over letters from children to parents. There are as many preserved between the parents themselves since Graeco-Egyptian husbands were often away on business. Some wives wrote lovingly, as this one who entreats: "Send for me—if you don't I'll die without seeing you daily. How I wish I could fly and come to you. . . . It tortures me not to see you."

Others wrote in quite another vein. Here, for example, a letter to a devout but neglectful husband who had answered a "call": he had entered a sanctuary at Memphis where he would stay on until he received a divine signal that he could go home. The signal obviously took its time

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coming, and the wife unburdens herself to her husband in one long, exasperated sentence:

"When I received your letter . . . in which you announce that you have become a recluse in Sarapis' temple at Memphis, I immediately thanked the gods at hearing you were well, but your not coming here when all the other recluses have come home, I do not like one bit, because, after having piloted myself and your child through such a bad time and gone to every extremity because of the price of food, I thought that now, at least, with you home, I would get some respite, but you haven't even thought of coming home, haven't given any regard to our circumstances, how I was without everything even while you were here, to say nothing of so long a period passing and such bad times and your not having sent us anything.

"What's more, Horus, who delivered your letter, reports that you've already gotten your release, so I really don't like it at all!"

Good children and spoiled children; loving wives and angry wives; devoted husbands and inconsiderate husbands—they speak from the correspondence of that bygone age just as they do today. But every now and then a letter turns up that reveals dramatically how remote, how alien, that world is from ours. Not in the material side of existence—such differences we take for granted—but in modes of thinking, in values. Today, some children that are unwanted are aborted or, if born, given to an orphanage, an adoption agency, or the like. Greeks and Romans were more casual. An unwanted baby, usually female, was often simply killed at birth. A letter from a husband off in Alexandria to his wife in their hometown up the Nile closes tenderly with the words: "You told me not to forget you. How could I ever forget you?" In the very sentence before this he writes: "If, as could well happen, you give birth, if it's a male, let it be—if it's a female, cast it out."

"There is no new thing under the sun," asserts the author of *Ecclesiastes* in his despairing comment on people's ways. He was too pessimistic.

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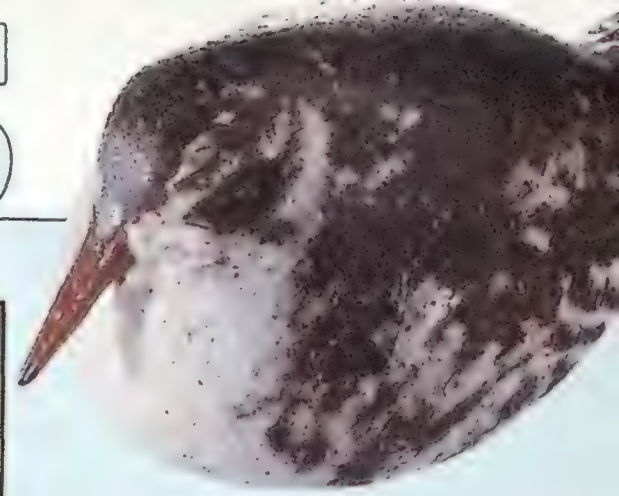

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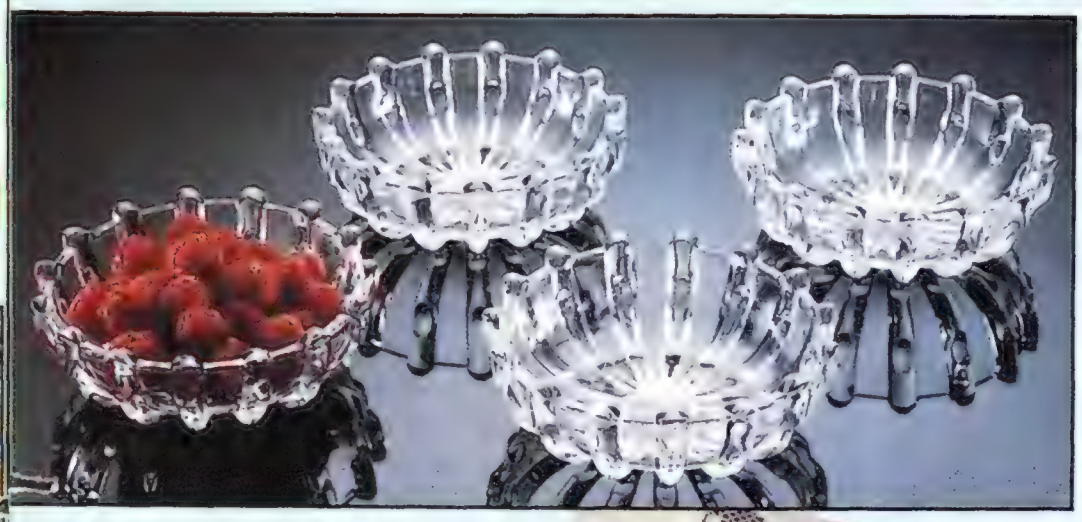

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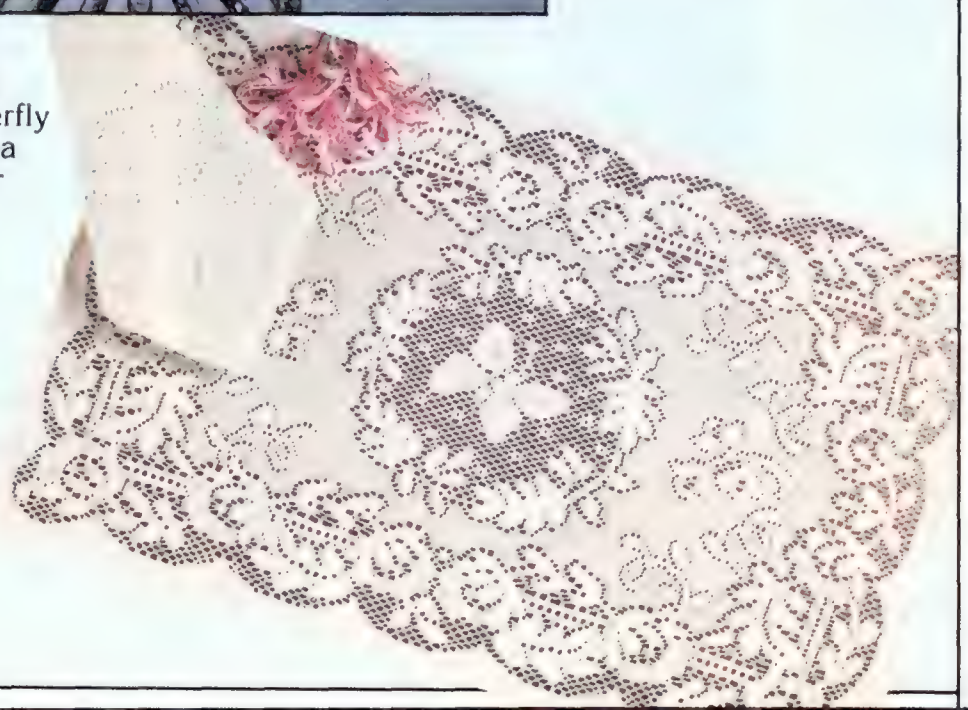

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Lloyd Goodrich
Harvard University Press, published for the National Gallery of Art, $90

"Eakins is not a painter," Walt Whitman once said, "he is a force." And so he is. It is instructive to stand in a gallery where an Eakins shares wall space with the work of other American painters and watch people who enter the room walk directly to the Eakins, to stare in admiration or—still, after all these years—to turn away disturbed, to take comfort in, say, a gaggle of Eastman Johnson children. There may still be debate about whether or not Thomas Eakins is America's greatest painter (I will take the affirmative), but there is no doubt about the power of his paintings.

Eakins at 58—a rare self-portrait by America's foremost portrait painter

His emphasis, as both teacher and artist, was on truth to the physical reality of the subject, whether it be the line of a boat in water, the movement of a horse's leg, or the presence of bone and muscle beneath the form, the face, the hand of a human subject. Described this baldly, the method may suggest a cold preoccupation with technique, but in Eakins that line, that movement, that presence contain Whitman's force.

In insisting on Eakins' realism, commentators occasionally make him sound as though he were simply a transcriber of the undoctored actual. In fact, like most realistic painters, he was a kind of stage manager, choosing costumes, providing props, blocking out the action, arranging the lighting. He differed from many of his fellow 19th-century artists, particularly the successful ones, in his refusal to prettify people and events. Yet he did not, as his persistent critics assumed, set out to paint the world as ugly. "Why do you paint such homely women, Tom?" a friend asked, and he answered, "I never knew that I did."

Even Lloyd Goodrich, who understands Eakins' approach to his subjects, often succumbs to negative idealization; for instance, he uses the words "almost somber" to describe the downturned face of *Baby at Play*, although the portrait seems only to convey the sense of intense concentration that children often bring to what they are doing.

Goodrich wrote the first extended study of Eakins back in 1933 and now, after 20 years in the making, his two-volume critical biography has been published; a third volume, a catalogue raisonné, is promised. The new work follows the shape and the approach of the original, happily fattened by the research that other scholars have produced in the intervening 50 years.

There are many new details about Eakins' work and life, but few surprises. He seems somehow sadder in the new work than he did in 1933 when his determined loyalty to his own brand of art made him a perfect image of the artist saying "be damned" to his unperceiving society; now there is a greater sense of his surprise and his disappointment in not being accepted at his own and quite correct valuation. The book tries to deal with his prickly personality, the quarrels within his family, the whisper of sexual

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irregularities, but there is little hard information, and he still remains the private person he was in the 1890s when he said, "For the public I believe my life is all in my work."

Goodrich's *Thomas Eakins* is the most complete and most lavishly illustrated presentation of Eakins to date. If the painter is still a bit elusive, it is partly inherent in his own reserve. The two chief disappointments in these volumes are that Goodrich tends to be repetitive, as though he had constantly to sum up what he has already told us, and that the color reproductions are sometimes disturbingly wrong. Look, for instance, at the purple that creeps into the sky of *The Crucifixion* and *Shad Fishing at Gloucester on the Delaware River*; and the reds that invade *The Old-fashioned Dress*, completely altering its color quality. Despite these not so minor qualifications, these two volumes will provide much information and pleasure to Eakins admirers, who are—or ought to be—legion.

Gerald Weales
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Lords of the Arctic:
A Journey Among the Polar Bears
Richard C. Davids
Photography by Dan Guravich
Macmillan, $29.95

The essential question about polar bears is this: are they unremitting killers? To find the answer, this writer-and-photographer team have spent the past five years seeking out these magnificent creatures in Canada and Alaska. Now, they have come back to give us a book of delightful photographs and a readable and informative text, one that combines not only their findings but also recent zoological research and the recollections of early Arctic explorers.

To be sure, polar bears are powerful. Some have weighed almost a ton. When one stands on its rear legs, it could—as the author points out—look an elephant in the eye. Nor are polar bears merely lumbering behemoths: they can cover ground quickly and have been clocked at 35 mph. Faced by a bear? The official answer, in parts of Canada, is: "Running is not a good solution. It may invite pursuit."

And are they strong? Consider this: polar bears often hunt by waiting for

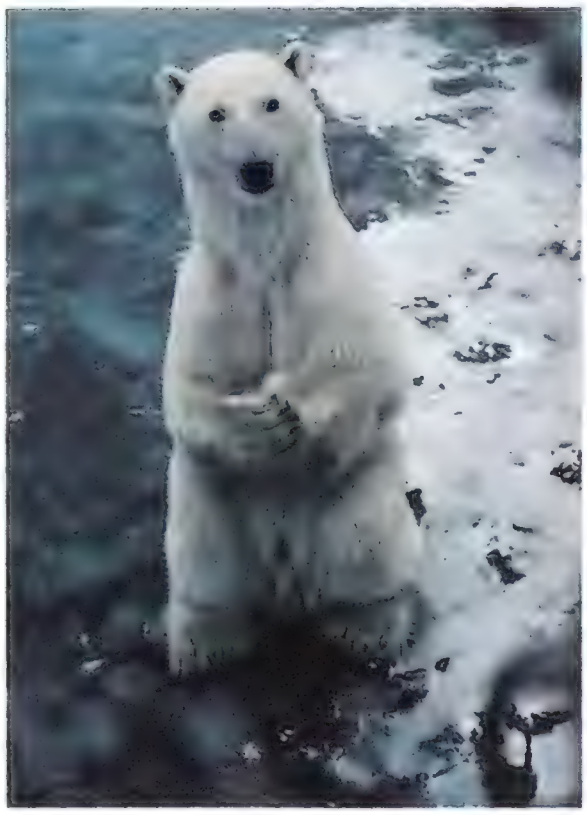
seals to surface at holes in the ice cover. Their neck and shoulder muscles are so strong that they have been known to pull a seal up through a small hole in the ice, thereby crushing every bone in the seal's body. A single swipe from a bear's paw can cause a man to lose an arm. Three oil workers have been killed by polar bears in the recent past.

In the face of such strength, the Eskimos long ago adopted a risky but apparently effective last resort. A modern-day poster in Churchill, Manitoba, advises: "It takes courage to lie still, but resistance would be useless." Churchill is an important center of polar-bear life. Large packs of bears gather there every year to await the first ice of fall—sheet ice to a polar bear is simply a convenient platform for seal hunting.

The oddity of that sign is that its advice is ageless. Arctic explorer and naturalist Edward W. Nelson (SMITHSONIAN, May 1982) recorded the same ploy among the people of Point Hope more than a century ago: "One of the men heard a bear approaching over the frosty snow, and having no weapon but a small knife, the bear being between him and the shore, he threw himself upon his back on the ice and waited. The bear came up, smelled about the man from head to foot, finally pressed his cold nose against the man's lips and nose and sniffed several times; each time, the terrified Eskimo held his breath until, as he afterwards said, his lungs nearly burst."

To test the other side of the question, author Davids had himself sealed inside a 4-by-4-foot steel and wire-mesh cage and set among a group of bears. He obviously liked it: "They didn't seem to consider me a possible meal; rather they seemed eager for companionship." One tried to bite through the wires: "When I tapped his nose he quickly withdrew and gave me what seemed like a hurt look, as if I had betrayed him." Another bear lay down at the foot of Davids' cage, as comfy as a family collie.

The experience left Davids with a rather refreshing point of view on this majestic but endangered species: "The trouble with being a polar bear, I thought, . . . is that everyone takes you seriously. When you're big and powerful and your paws are studded with claws like medieval instruments of torture, people flee,



A curious polar bear, Ossie, raises 800 pounds to look at photographer.

assuming you're out to eat them, even though at the moment you may be nothing more than curious. And curious is what you are always, for good reason. After roaming the ice for days of nothing but blinding white snow, the slightest change in color or form is bound to be exciting. So you move toward it, nose held high to catch the scent. You stop and lift yourself to your full height to get a better look. Then you drop down and move forward, sometimes at a run. So men have fought you with dogs and spears and knives, and later, in their igloos, whiled away the long hours of night with stories of your strength, your wisdom, and your ferocity."

The verdict on the polar bears is clear: in spite of a "generally amiable disposition" they are "profoundly dangerous, particularly when hungry." But in these pages at least, one can sense the full range of polar-bear life: at work, hunting food and trying to catch a tiny two-ounce vole hidden in the tundra grass, the bear cocking one ear and then the other, listening for the faint squeals of his prey; or at play among the snowbanks, sliding down the glazed hummocks and pressure ridges.

And when a polar bear naps, it will often stretch out with its massive head pillowed on an incurved paw just as you and I might do.

Michael Olmert
Writer and critic

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The Last Prima Donnas
Lanfranco Rasponi
Alfred A. Knopf, $22.50

"We never spoke of singers, only of artists. Today there are only singers, no more artists. They all have villas in Switzerland and Swiss bank accounts. They will sing anywhere and anything for a good fee. . . . These people sell their voices the way a salesman sells shirts or ties."

The speaker is Gilda dalla Rizza, Puccini's favorite "Butterfly," 82 at the time she was interviewed in 1975, one month before her death. She was convalescing from a broken hip at the infirmary of the Casa Verdi in Milan, a home for aged musicians. If she is not exactly typical of the 56 subjects Lanfranco Rasponi, a critic and correspondent for *Opera News*, has included in his book, she does articulate a point of view that most of them—and Rasponi himself—obviously share. That is that prima donnas are an extinct species and in their absence the world of opera is in chaos. It is dominated by arrogant conductors and insensitive stage directors who, as Rasponi writes, "quash the individuality of artists." Singers are reckless with their talents; furthermore, greed for riches, according to dalla Rizza (below), has turned the lyric theater into "a temple full of revolting merchants."

Gilda dalla Rizza in title role of *Francesca da Rimini*. She told author she was "a relic of another age."

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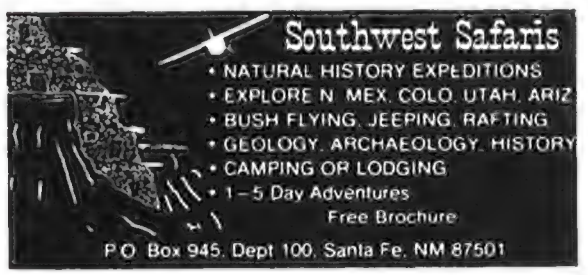
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Readers will respond to this intemperate yet instructive collection of interviews gathered over the past 50 years as though it were two different books. Either they will see it exclusively as the jeremiad it obviously is and agree with the author that opera has become "a hideous spectacle" or attack him *con brio*. Or, eschewing contention, they will curl up with it and enjoy the rambling, gossipy and frequently good-humored talk of these "relics of another age," many of whose names are obscure even to musicologists, as they recall their lives and careers, their associates and rivals. Opera buffs will supplement their reading by pulling out treasured 78's from their record collections and listening to pale, fragile reproductions of voices that once were objects of hysterical adoration.

A word on the author's main argument: by loading it so heavily with the testimony of these ancient witnesses, he weakens his credibility. Who wouldn't—if she were not only old, sick and broke but also largely forgotten—look critically on the institution over which in her glory days she reigned? Many of these former divas, of course, were not in such straits when interviewed, and some of their names are still household. But the more articulate among them are either spiteful or condescending, and Rasponi, who himself has been involved with opera for more than half a century, sees little evidence that would challenge their viewpoint. One wonders, however, if they would not have taken advantage of the fat fees, the jet travel, high-fidelity recording, television and other phenomena that have served to popularize opera so radically had these been available 50 years ago. And with this popularity has opera really become "hideous"? Is it necessarily bad that the Metropolitan Opera has, as recently reported, become "the General Motors of the world's opera companies"?

But if you work up a frenzy over the author's contentions you may miss the other fun. What these women had to say is quite wonderful. Ester Mazzoleni, a noted interpreter of the Verdi repertoire, who at 94 in 1977 was the oldest of Rasponi's subjects, said of certain modern singers: "Now they not only give all, they also give what they haven't got." And Ebe Stignani, one of "The Huge Voices," described her career with fetching modesty, "happy at the success of my colleagues,"

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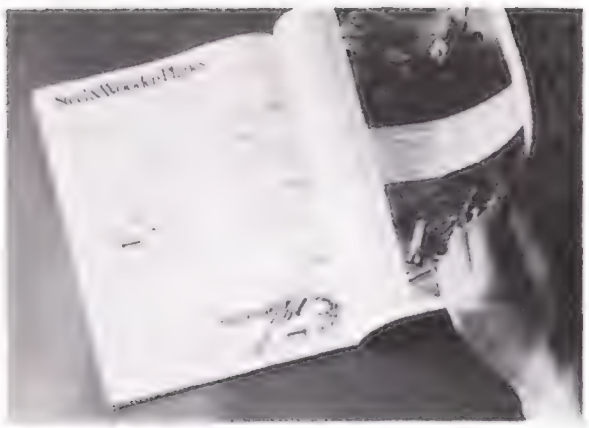

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but admitted that "there really has been no competition in my wing to speak of."

The Last Prima Donnas is helpfully organized with an introductory chapter on "Voices and Repertoire" that enables the ordinary reader to understand technical references in the text without a Grove's dictionary at his elbow, and a comprehensive index that covers many of those divas not favored with interviews of their own. Maria Callas was not interviewed, but Rasponi gives her a chapter anyway. She is his *last* last prima donna; inevitably, he calls her "a figure out of a Greek tragedy."

James Idema
Chicago free-lance writer

Leonardo da Vinci as a Musician
Emanuel Winternitz
Yale University Press, $29.95

Leonardo da Vinci has long been considered the supreme example of Renaissance accomplishment. In the prodigiousness and variety of his gifts—he was a painter, sculptor, architect, engineer, scientist and musician—there is something at once awesome and inspiring. As a result, he is less often thought of as an individual human being who lived in historical time than as a symbol of the infinite intellectual and creative potentialities of mankind.

Not surprisingly, virtually every aspect of his work has been scrutinized by succeeding generations. The one important exception is music. The oddness of that omission is plainly revealed by this fascinating study, the first book ever written on the subject, and one that not only shows how significant a role music played in Leonardo's ceaseless investigation into the nature of things, but makes clear that, after painting, he accorded it the highest place among the arts.

During the past two decades, Emanuel Winternitz, the founder and first curator of the department of musical instruments at the Metropolitan Museum of Art in New York, has published many articles about Leonardo's musical activities. Here he incorporates his investigations into a comprehensive survey of the subject. Its effect is to expand significantly the boundaries of Leonardo's creative personality, and also to provide a great deal of incidental information about music making in Italy during the late 15th and early 16th centuries.

At the same time, the book reveals how fragmentary Leonardo's achievements in music actually were—though Winternitz does not, I believe, mean to do so. My judgment has only a little to do with the fact that no trace survives of Leonardo's musical compositions or of his innovative musical instruments, like the drum that could produce chords, or the *viola organista*, which must have been something on the order of a one-man string band.

Leonardo's contemporaries assure us that on his chosen intrument, the seven-stringed *lira da braccio*, he was an improviser of genius, and improvisation by its very nature was, until the age of sound recording, a fugitive art. Leonardo's improvisations, like Handel's on the harpsichord or Bruckner's on the organ, lived only at the moment of their creation. Unlike Handel and Bruckner, however, he delivered himself of no other kinds of composition such as would sustain his reputation as a musician for succeeding generations. As for musical instruments, these are notoriously fragile.

As reported by Winternitz, Leonardo's many references to music in his notebooks suggest less a dedication to the art for its own sake than a means of inquiry into the laws that govern things apparently dissimilar. He makes analogies, for example, between the sound of an organ and the state of the soul. One of his drawings shows a bizarre stringed instrument created from the parts of animals. Another compares cross-sections of an onion and the human head, as part of his study on acoustics.

Leonardo's genius, in any case, was destined always to journey—to follow any promising idea no matter how incidental, to take up one discipline after another—and only rarely to arrive. It is solely in a handful of paintings, like the *Mona Lisa* and *The Virgin of the Rocks*, that he achieved creative fulfillment. He himself wrote as good a summary of his dilemma as anyone: "As every divided kingdom falls, so every mind divided between many studies confounds and saps itself."

Yet to have the musical element of Leonardo's thinking presented as clearly and documented as carefully as it is here is to better understand his age—as well as one of the strangest and most profound minds of Western civilization.

Dale Harris
Contributing editor, *Keynote* and *High Fidelity/Musical America* magazines

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Additional reading

Cave art (p. 36)

The Dawn of European Art by André Leroi-Gourhan, Cambridge University Press, 1982

"A Century of Palaeolithic Cave Art" by Margaret W. Conkey, *Archaeology*, July/August 1981

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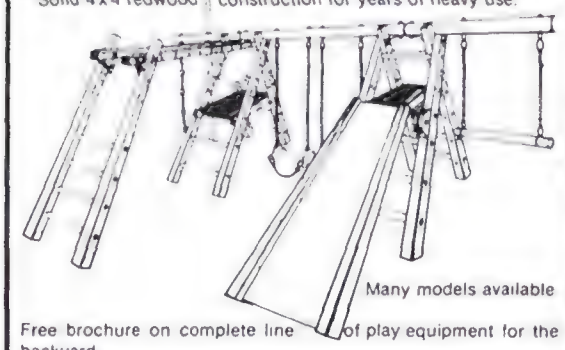

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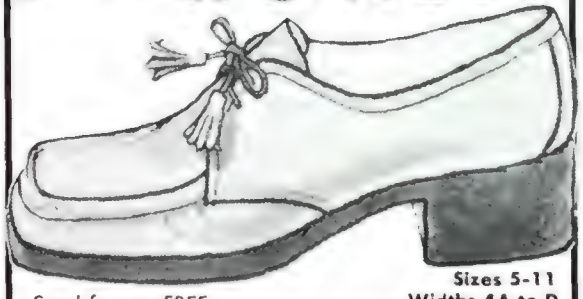

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Margaret Mead (p. 66)

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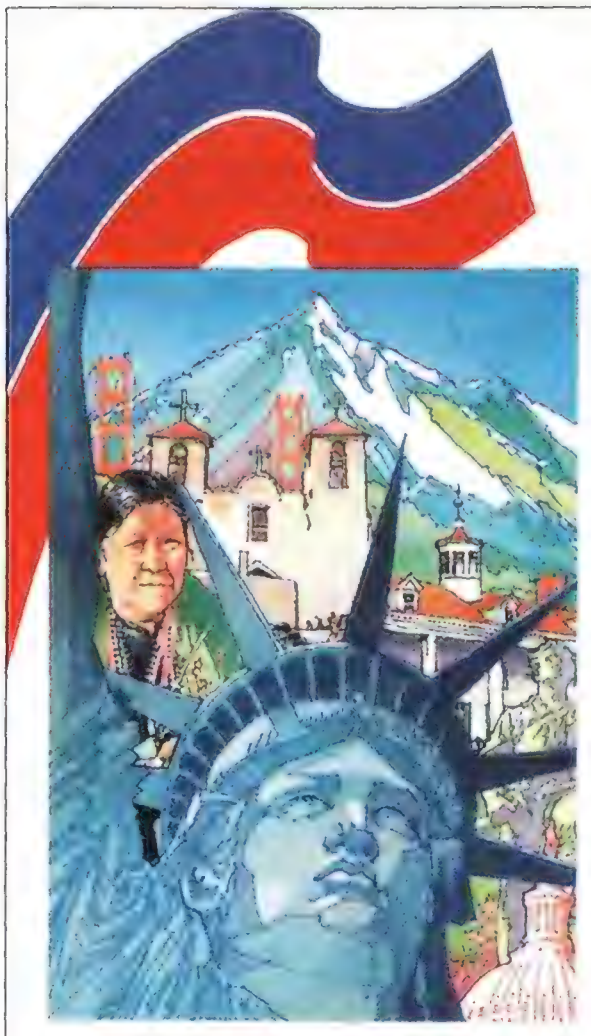

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Smithsonian highlights

When the National Air and Space Museum held a five-day open house last year at its restoration facility in Suitland, Maryland, the staff expected about 1,000 people. This year they know better. "We had no idea how popular it would be," laughs Rita Bobowski, public affairs chief at NASM. "We ended up with close to 9,000—more people than came during the entire rest of the year."

The open house, which will be held on April 16 and 17, is as exciting for the restorers as it is for the public. "If you come this year," says Bobowski, "you can look over their shoulders as they work on a World War II Nakajima Night Fighter or the 1912 Wiseman-Cooke Biplane—the only one in the world. Many of them have little exhibits they've made up themselves, and they love to answer questions." Get an early start for this outing.

Special April exhibits and events

National Air and Space Museum
Islands of the Universe (April 20; 7:30 P.M.; Spacearium) Lecture by Martin Schwarzschild on giant elliptical galaxies.
The Viking View of Mars New exhibit looks at six years of achievement.
Wings and Things: Aviation Open House (April 16, 17; 10 A.M.-3 P.M.; Paul E. Garber Restoration Facility) Special restoration demonstrations and tours.

Freer Gallery of Art
Coloration and Discoloration in the Japanese Print (April 12; 8:30 P.M.; HM&SG Auditorium) Lecture.
Japanese Ceramics from Past to Present (through August 31).
Chinese Flower Paintings (through August 31) Forty scrolls and album leaves.

Cooper-Hewitt Museum (New York)
Fabergé: Jeweler to Royalty: From the Collection of Her Majesty Queen Eliza-

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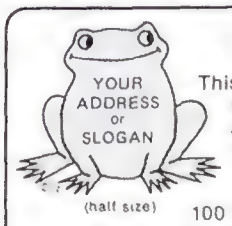

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National Museum of Natural History
Fossils for Fuel (April 8; noon; Baird Auditorium) Lecture by Anita Harris.
Newts, Frogs, Snakes and their Brethren in and around Washington, D.C. (April 15; noon and 8 P.M.; Baird Auditorium) Lecture by George Zug.

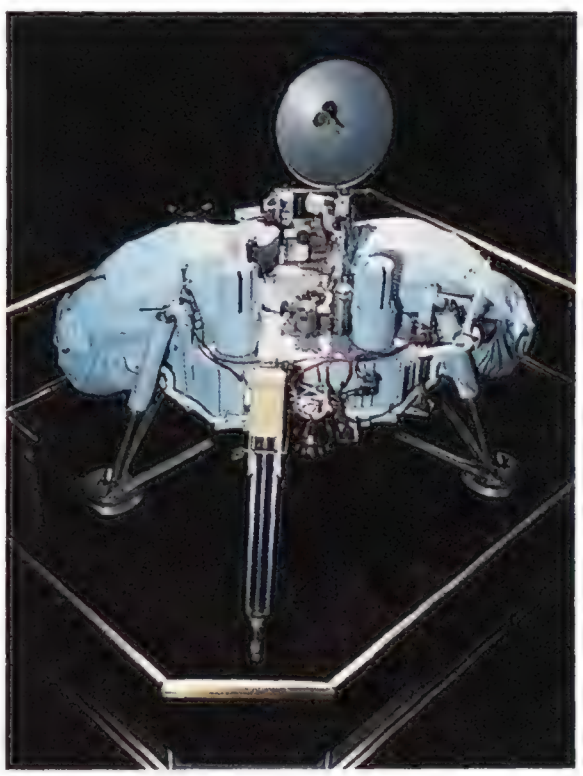
National Museum of American Art
Charles Hawthorne: The Late Watercolors (April 15-September 5) Some 60 works by early 20th-century artist.

National Museum of American History
Spring Celebration (April 29-May 1; noon to 5 P.M.) The magic of the midway—with historical amusement-park rides.

National Portrait Gallery
Portraits on a Page of History: The Career of James Barton Longacre, 1794-1869 (April 9-October 9) Works by artist who became Chief Engraver of U.S. Mint.

Smithsonian events

For price information and tickets to Resident Associate events, call 357-3030:
Three on the Scene (April 6 and April 13; 8 P.M.) Grace Glueck, Mary Boone and Carter Ratcliffe in two informal evenings on the New York art scene.
Art-in-Context: The Art and Thought of the Renaissance (April 2; 10 A.M.) All-day seminar taught by Alice Mary Hilton.
An Evening with Isamu Noguchi (April 20; 8 P.M.) Noguchi discusses his life.



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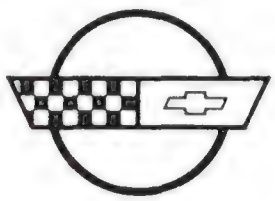

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The Ancient Silk Route and the Way to Shambhala (April 19; 8 P.M.) Lecture by Asian-studies scholar Edwin Bernbaum.

Regional Events Program

In April, the Regional Events Program will travel to Scranton and Wilkes-Barre, Pennsylvania, and Milwaukee. The Program in Pennsylvania (April 5-12) features portraits of America's presidents, forensic anthropology, Appalachian art and American folk music. The Milwaukee series (April 22-May 1) will focus on primitive man, American Indian history and plate tectonics, and will offer seminars on current biography, nature photography and volcanology. Associates in these cities should have received invitations by this time. For further information, write: Regional Events Program, A&I 1208, Smithsonian, Washington, D.C. 20560.

Also during April, a series of five half-hour cable television productions featuring the research of Smithsonian scientists and historians will be shown on the Appalachian Community Service Network's "The Learning Channel." Associates who have access to this channel in their communities should check local cable television guides for times of broadcasts.

Radio Smithsonian

The Four-cornered Earth (a view of native American science, technology and medicine); Gosh-All Gottschalk (America's first pianist-composer of international reputation); and selections from John Burns' book of scientific poetry and puns are among the April features of Radio Smithsonian. To find out which stations in your area carry these programs, write: Smithsonian Office of Telecommunications, MNH Room C222B, Washington, D.C. 20560.

Spring Musical Weekend

A Metropolitan Opera performance of *Der Rosenkavalier* at the Kennedy Center is featured on the Eleventh Musical Weekend, April 29-May 1. During the weekend the Division of Musical Instruments and the Friends of Music provide all meals, hotel accommodations for two nights, and musical activities. Guests will be greeted by a Scottish piper at the Kennedy Center for a reception and dinner before the opera, followed by a champagne reception at the Watergate Hotel. Other activities include performances

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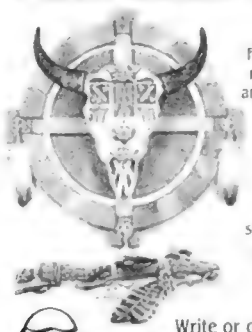

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and demonstrations on historical musical instruments, dinner at the National Portrait Gallery, lunch on a mule-drawn canal barge, and afternoon tea at an embassy. For details write to: Musical Weekend, Room 4124, NMAH, Smithsonian, Washington, D.C. 20560.

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibits to hundreds of cities outside Washington. To sponsor a show in your community, write: SITES, Smithsonian, Washington, D.C. 20560. Here are some April exhibits:

Santa Ana, California (April 23-June 5) *Treasure of the Quicksilver Galleons*, Bowers Museum.

Hartford, Connecticut (April 2-May 29) *Renaissance of Islam: Art of the Mamluks*, Wadsworth Atheneum.

St. Petersburg, Florida (April 3-May 21) *Of Time and Place: American Figurative Art from the Corcoran Gallery*, Museum of Fine Arts.

Charleston, Illinois (April 23-May 22) *Iceland: Fire of the Arctic*, Tarble Art Center.

Ames, Iowa (April 30-June 11) *Contemporary Art from the Netherlands*, Brunnier Gallery and Museum.

Washington Craft Show

The Washington Craft Show, sponsored by the Smithsonian Associates Women's Committee, will be held May 6-8 in the Departmental Auditorium at 1300 Constitution Ave. N.W. Works by 100 artists from 29 states have been selected for inclusion in this juried exhibition and sale.

Membership benefits

A pre-visit packet, full of helpful information for Associates coming to Washington, includes "Planning Your Smithsonian Visit," and is free; send postcard request or phone Associates Reception Center, Smithsonian Institution, Washington, D.C. 20560 (202) 357-2700; for hearing impaired, TDD (202) 357-1729. Allow two weeks for receipt.

Most Smithsonian museums are open 10 A.M. to 5:30 P.M. The following museums will be open until 7:30 P.M. from April 3-9: the castle, HM&SG, NMAH, NMNH and NASM. Begin your visit at the Associates Reception Desk in the castle, where a cordial welcome and special printed materials await you, from 10 A.M. to 4 P.M.

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Highlights continued

Nomadic art goes on the road

John Topham, an American construction consultant working in Saudi Arabia in 1977, went out one Friday to pick up some fruits and vegetables at a market. He still recalls his encounter with the village and Bedouin women selling handwoven rugs on the sidewalk. He forgot the vegetables and bought his first Bedouin rug. A short time later his collecting fate was sealed when, on a visit to the al-Hasa oasis, a man accosted him with: "Antiques, follow me." He did.

Topham's inspired collecting has resulted in an exhibit, "Traditional Crafts of Saudi Arabia," which is on view at the Textile Museum in Washington, D.C., until May 22. The show, organized by the Memorial Art Gallery of the University of Rochester, is now being circulated by SITES. Functional by necessity, the 150 textiles, weapons, coffeepots, leather water bags, pieces of jewelry and costumes demonstrate the place of art in even the most nonacquisitive society.

The nomadic life of the Bedouins (from the Arabic word *Badawi*, "tent-dweller") is dictated by the sparse vegetation and water of the Arabian peninsula: they must constantly move with their grazing camels and sheep. Traveling lightly and compactly, they carry nothing extraneous, and they recycle materials.

The centerpiece of the exhibition is a 50-foot-long tent, which is separated by geometrically patterned, hung "walls" into three compartments—the men's quarters, the sleeping area and the cooking room. Tents and tent walls are woven in long panels, which are sewn together. Just as Americans rotate the tires of their cars, Bedouins rotate the cloth panels so that wear is distributed evenly.

The new oil-well economy in Saudi Arabia is changing things so rapidly that contemporary artifacts are becoming museum pieces even before they can be collected. About 20 percent of the people are still nomadic. But when John Topham saw inner tubes slung over the backs of camels, replacing the traditional animal-hide bags for carrying water, he knew he'd better move fast.

Constance Bond

Bedouin tent wall is hung to create interior rooms.

Braided-leather bag (*kis*) holds much-prized coffee beans.

Silver-and-coral bracelets double as decoration and movable bank account.

Filigree softens the harsh edge of dagger and hilt.

Five pendants, strung with turquoise, coral and glass beads, repel evil eye.

Tent curtain is made of narrow strips woven on portable loom, sewn together.

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Domestic Study Tours

Baja California April 29-May 8: Adventure cruise in the Gulf of California. Observe whales and dolphins plus the nesting birds of the Midriff Islands.

Crafts Today May 5-8: A seminar for both the novice and experienced collector held in conjunction with the first Washington, D.C., Craft Show.

Florida Keys May 13-23: Active program of canoeing and snorkeling includes a two-day trip to the Dry Tortugas.

Wines of Napa and Sonoma May 22-28: In-depth study of California wines includes visits with wine masters; special tastings.

Southwest Archaeology May 28-June 6: Camping trip includes Mesa Verde, Monument Valley and river rafting.

Bryce, Zion and the Grand Canyon June 5-13 or September 6-14: Hike spectacular trails while learning about the geology, wildlife and flora of these national parks.

San Juan River June 8-16: Exciting white-water trip through the canyons of south-eastern Utah.

Treasure-Houses of Early America June 12-18: Architecture and decorative arts of Winterthur, New Castle, Brandywine area.

Glacier/Waterton National Parks July 10-19 or July 18-27: Hike through awesome scenery with overnights at park lodges.

Desolation and Gray Canyons July 22-August 1: A white-water trip for the adventurous on Utah's Green River.

Colorado Rockies August 7-13: Dig for fossils, hike alpine meadows and explore 6,000-acre outdoor classroom in the shadow of Pikes Peak.

Along the Bozeman Trail August 20-27: Study Northern Plains Indians history with visits to Crow Indian Fair, Custer's Battlefield, the Big Horn Mountains and Yellowstone National Park.

Isle Royale and Minnesota's North Shore August 19-28: Hike through the pristine wilderness of forests and lakes in the northwest corner of Lake Superior.

Grand Canyon August 12-22 or August 26-September 5: A sublime spectacle, seen on a raft trip down the Colorado River.

Colorado Railroad and Mining History August 20-28: Trace the colorful Gold Rush era from Denver to Durango.

Coming in September...Pacific Northwest, Boston, Canyon and Mesa Archaeology.

Washington "Anytime" Weekend: An economical and convenient way to visit your choice of Smithsonian museums. Package includes hotels, meals, Tourmobile and exclusive tour of Smithsonian castle. Application and payment must be received at least ten days prior to arrival.

Foreign Study Tours

These tours range in size from small group experiences to charter adventures and vary in price from low cost to deluxe, depending on the type of travel, destination and length of trip:

People's Republic of China 1983 Climb China's sacred peaks, cruise the Grand Canal, explore the back roads, or study decorative arts and antiques. Thirteen exclusive tours are led by Sinologists and include intensive pre-tour briefing.

Rouen and the Norman Countryside April 16-May 1 or October 1-16: Ancient Rouen provides a superb setting for walking tours, museum visits, and excursions including beach resorts and Monet's Giverny.

Russia May 6-21: Leningrad, Moscow and Riga: See fabulous museums, palaces and landmarks; plus schools, factories and the best of Russian theater.

Ecuador and the Galápagos Islands May 7-20: After visiting Quito and the Andean countryside, board the *Santa Cruz* for a study voyage to Darwin's famed islands.

Seminar in Florence May 13-29: Study the Florentine Renaissance while living in a 15th-century villa. Attend lectures, field trips, Italian language classes and special evening activities.

Odyssey of Flight May 22-June 6: National Air and Space Museum experts lead a grand tour of British and French aviation museums and private aircraft collections, plus the Paris Air Show.

Alpine Countryside May 28-June 12 or September 10-25: Study folk art and architecture, flora, fauna and geology in a charming Austrian mountain village.

Wild Highlands of Scotland June 2-19: Based in a castle, observe shy wildlife and the brooding landscapes of loch and moor.

Cotswolds Countryside June 26-July 10 or July 10-24: Archaeological sites, market towns, woolen mills and historic homes in this quiet corner of old England.

European Waterways July 12-24: After two days in Paris, board the *Argonaut* in Rouen. Visit museums in Bruges and Amsterdam before cruising the Kiel Canal to Copenhagen.

Sailing the Greek Islands August 25-September 7: Set sail on the luxurious four-masted yacht *Sea Cloud* for an idyllic journey from Athens to Asia Minor.

Paris and Provinces August 28-September 11: Six days in Paris followed by an excursion to Provence or Burgundy.

Oxford/Smithsonian Seminar September 9-24: Live in medieval or modern "digs," dine at high table, and enjoy the special ambience of this famous university town. Oxford faculty lead classes and field trips in art, literature, history, archaeology, manuscripts, and science and belief.

Black Sea Passage September 11-24: Follow the ancient route of Jason and the Argonauts, cruising from the Aegean to the Black Sea. The *Argonaut*'s ports will include Nessebur, Bulgaria; Constanta, Romania; Odessa, Yalta and Istanbul.

Scotland September 23-October 7: Special walking tours in Edinburgh plus visits to castles, abbeys, battlefields, archaeological sites, and enchanting countryside.

Egypt and the Nile October 3-21: Visit Cairo, then cruise aboard a chartered river ship to explore magnificent sites.

Portugal October 18-November 1: Enjoy Lisbon's diverse charms and gentle character; sample the rich variety of the historic coastline and hinterland.

Japan October 20-November 7: Extended program in historical Kyoto and Nara followed by a choice of travel to the Inland Sea or the Sea of Japan.

Write National Associates, A&I 1278 Smithsonian Institution, Washington, D.C. 20560 or call (202) 357-2477 for specific tour brochures

in Washington

Selected Studies Seminars

Enjoy the treasures of the Smithsonian in unique, popular programs and special behind-the-scenes tours. Choose from:

The Golden Age of Flight April 10-15: The staff of the National Air and Space Museum and famous guest authors focus on the sensational record flights and countless companies that boomed or busted in the course of a season. Includes in-depth tours.

Quilting with the Experts May 15-20: Small workshops with Maria McCormick-Snyder, Jeffrey Gutcheon and Mary Penders on "Color and Design," "Precision Piecing," "Log Cabin Variations," "Creative Hand Quilting" and "Sampler Quilts."

Connoisseurship of American Ceramics September 25-30: Well-known author Elaine Levin and Lloyd Herman, Director of the Renwick Gallery, focus on the unique historical development of American forms. Highlights include the artists who are causing flourishing national interest; a special exhibition at the Renwick Gallery; and visits to public galleries, artists and studios.

Lost America: Myth and Reality October 2-7: Dean Snow, renowned author, archaeologist, and consultant to the National Geographic Society, discusses in generously illustrated lectures important archaeological sites throughout America, including the great burial mounds, the gigantic systems of geometric earthworks, and the temple builders inspired by Mesoamerican cultures. Highlights include tours, recent spectacular discoveries, and the reason for the demise of the great prehistoric cultures.

Genealogical Research October 2-7: Taught by Milton Rubincam, Marilyn Duncan and other leading authorities, participants learn how to conduct research in major genealogical repositories such as the National Archives, Library of Congress and DAR Library.

Aircraft Restoration October 23-27: The master craftsmen of the National Air and Space Museum share their many techniques in workshops at the Paul E. Garber Facility (formerly Silver Hill).

American Antique Furniture October 23-28: Connoisseurship of masterpieces, 1650-1840. Includes great collections, detection of fakes, care of antiques and tours of the Winterthur Museum and the Diplomatic Rooms at the Department of State.

or (202) 357-2475 for seminar brochures.

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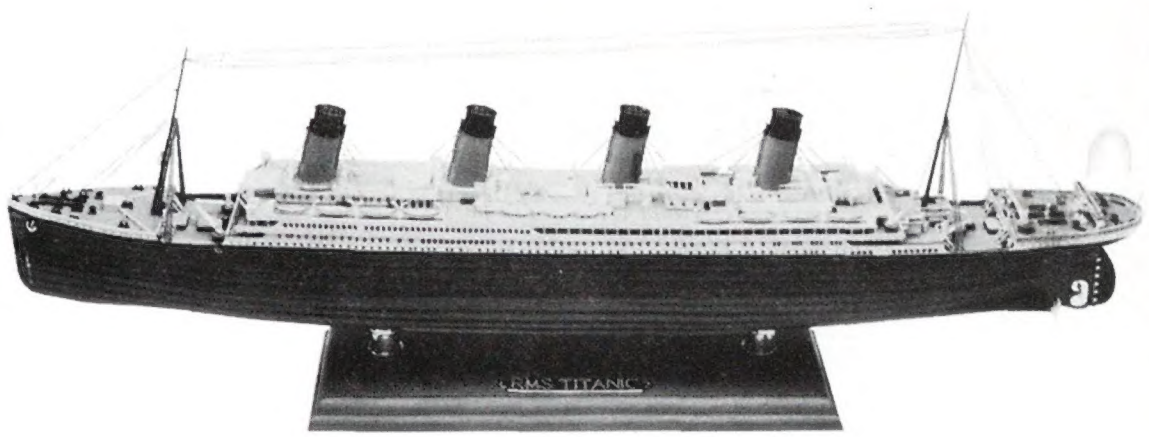

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By Curt Suplee

Zork, RAMS and the Curse of Ra: Computo, ergo sum

The dread day arrives. There amidst a litter of packing materials, wreathed in a Gordian tangle of cables and prongs, lustrous and aloof as a UFO, sits his personal computer. Ticket to Tomorrowland. Passion and Nemesis.

It looked positively servile in the showroom, hardly tougher than a toaster oven —fairly humming with selfless zeal to balance his budget and write his reports. But within hours, the neophyte realizes he is locked in an archetypal conflict, the most grueling confrontation between Man and machine since John Henry took on the steam drill. Three sleepless weeks, 400 instruction-manual pages and a near-divorce later, he will either crack or emerge transformed. And that, he begins to realize, is precisely the point. . . .

We are a nation divided. Forget unemployment, nuclear menace, herpes and cheese lines. The main megaworry in modern life is the personal computer.

By the end of the decade, an estimated 29 million families will have one; last year alone about two million machines were sold for home use and another 1.2 million for small businesses, prompting *Time* magazine to devote its Man-of-the-Year cover to the screening of America. Yet few trends since the advent of rock-and-roll have so polarized the populace into rival anxieties: upwardly mobiles who feel that without one of the ubiquitous bleating boxes they'll miss the Progress Express and end up as obsolete as blacksmiths in the chip-shape future; phobics who cringe from the whole trend; skeptics, stupefied that an ostensibly sane adult would pay upwards of 2,000 recession dollars for a glorified calculator that plays games called Zork, Pig Pen, Bounceoids and the Curse of Ra.

But they're all missing the meaning of the cybernetic bonanza—the point that the new owner grasps with the first tremor of primordial terror when he unpacks his set: mastering the computer has become our new Rite of Passage.

Societies have always employed stylized ceremonies to convert neophytes into certified members of the tribe. In primitive cultures, traditional patterns include the sacrifice of blood, ritual humiliation, temporary banishment in which the candidate must endure solitary vigil by night (symbolic death), and eventual return (symbolic rebirth) to the circle of elders, who invest the initiate with a secret vocabulary, new rights and powers.

The rituals of computer mastery—a process as rigorous, arcane and exclusive as the Eleusinian mysteries—take a gilded bow to that same tradition.

Stage One. Envious that computerized peers possess a potency he lacks, the supplicant makes a painful offering of dollars as evidence of earnestness. In exchange he is given a magical box and a set of cryptic incantations ("the following protocol parameters initialize asynchronous communications") and betakes himself to a private place. The humiliation phase begins immediately: the instructions are incomprehensible, the program will not run. In daily despair, he calls the computer-store shamans, only to be caustically reminded that he has overlooked the most self-evident procedure (ritual shame compounded by ritual insult): "It's all in the manual!"

Stage Two. Most ancient rites of passage preclude commingling of sexes for the duration of the trial. Ditto for our latter-day counterpart. Hence the current media hysteria over the "computer widow" syndrome. As his dedication to the rites deepens, the neophyte typically returns home from work and locks himself in the basement with the box. During the dark hours, he endures heroic ordeals, grappling for mastery against such occult entities as Disk Error Read, Drive B, Format Failure and the soul-chilling Invalid Command. Throughout the night he repeats the ancient cry, "Oh, hell!" emblematic of mythic descent into Hades and death of the old self. It is perhaps no accident that some of the oldest and still most popular computer games are quest adventures similar to Dungeons and Dragons, involving perilous descents into cavernous mazes. What else is a microchip or a circuit board? It is not for nothing that programming adepts are called "computer wizards."

Only the fittest survive. The vanquished acknowledge their unworthiness by placing a classified ad with the ritual phrase "must sell—best offer," and thereafter dwell in infamy, relegated to discussing gas mileage and lawn food.

But if successful, you join the elite sodality that spends hours unpurifying the dialect of the tribe with arcane talk of bits and bytes, RAMS and ROMS, hard disks and baud rates. Are you obnoxious, obsessed? It's a modest price to pay. For you have tapped into the same awesome primal power that produces credit-card billing errors and lost plane reservations. Hail, postindustrial warrior, subduer of Bounceoids, pride of the cosmos, keeper of the silicone creed: *Computo, ergo sum.* The force is with you—at 110 volts. May your RAMS be fruitful and multiply.

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